**EAST COAST RAILWAY**
**SAMBALPUR DIVISION**

**Srl. No: - SWR/BMCK/59**

## STATION WORKING RULES OF BISSAMCUTTACK STATION (CODE: BMCK)

BG/MG/NG: Broad Gauge
Date of issue:
Date brought into force:

**NOTE**: -

The Station Working Rule (SWR) must be read in conjunction with General and Subsidiary Rules and Block Working Manual. These rules do not in any way supersede any rule in the above books.

### 1.0 STATION WORKING RULE : -

1.1 **STATION WORKING RULE DIAGRAM NO.- WRD.ECoR.SBP.BMCK.02**

1.2 **SIGNAL INTERLOCKING PLAN NO.: SIP.ECoR.SBP.BMCK.02**

The Station Working Rule diagram and approved Signal Interlocking Plan shows the complete lay out of the yard, siding, normal position of points, the Signaling and Interlocking arrangements, Gradients and Level Crossings within the station limits. This must be referred to for giving details of the point numbers and signals when reporting accidents.

### 2.0 DESCRIPTION OF STATION: -

BISSAMCUTTACK is a six lined station, at KM 305.364 from Raipur. It is a Standard – III interlocked 'B' class station with Electronic Interlocking (EI) and Absolute Block System of Working. Dual Detection MSDAC is provided in the entire yard including LVCD at either end of the station for last vehicle verification.

### 2.1 GENERAL LOCATION:-

| | | | |
|---|---|---|---|
| 2.1.1 | **NAME OF STATION** | **:** | BISSAMCUTTACK (BMCK) |
| 2.1.2 | **CLASSIFICATION OF STATION** | **:** | 'B' class |
| 2.1.3 | **NAME OF THE SECTION** | **:** | Vizianagaram Jn.- RAIPUR Jn Double line & with Multiple line between TIG-THV, RE, BG section. (Situated in between MUNIGUDA and THERUVALI stations) |
| 2.1.4 | **ROUTE** | **:** | "D" |
| 2.1.5 | **LOCATION** | **:** | KM.305.364 from Raipur. |
| 2.1.6 | **PI/EI** | **:** | EI |

### 2.2 BLOCK STATIONS, IBH, IBS ON EITHER SIDE AND THEIR DISTANCE AND OUTLYING SIDINGS: -

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i) Vizianagaram end – THERUVALI (Code: - THV) at an inter distance of 18.352 Km.

ii) Raipur end - MUNIGUDA (Code: MNGD) at an inter distance of 16.900 Km.

iii) Passenger Halt: - Nil.
iv) Flag station: - Nil
v) Outlying siding: - Nil
vi) D.K. station: - Nil.
vii) IBH: - NIL
viii) IBS: - The Section between BISSAM CUTTACK and THERUVALI stations split into two Block sections by providing Intermediate Block Signals at Km: **313.440** on UP Line and at Km: **313.935** on DN Line. Similarly, the Section between BISSAM CUTTACK and MUNIGUDA Stations split into Two Block Sections by providing Intermediate Block Signals at Km: **297.540** on DN Line and at Km. **297.550** on UP Line.

## 2.3. BLOCK SECTION LIMITS: -

| **Between stations** | **The point from which 'Block section' commences.** | **The point at which 'Block section' ends.** |
|---|---|---|
| Between MNGD – BMCK (UP Line) | i) UP Advanced Starter signal No.45 of MNGD station.<br>ii) UP IB signal No 49 of MNGD station. | i) 400 Mtrs beyond UP IB signal No 49 of MNGD station.<br>ii) BSLB on UP line of BMCK station. |
| Between BMCK - MNGD (DN Line) | i) DN Advanced starter signal No. 48 of BMCK station.<br>ii) DN IB signal No 50 of BMCK station. | i) 400 Mtrs beyond DN IB signal No 50 of BMCK station.<br>ii) Facing Point No 60A on DN line of MNGD Station. |
| Between BMCK - MNGD (3rd Line) | DN Advanced starter signal No. 46 of BMCK station. | UP Advanced starter No. 47 of MNGD Station. |
| Between BMCK – THV (UP Line) | i) UP Advanced starter signal No.45 of BMCK station.<br>ii) UP IB signal No 49 of BMCK station. | i) 400 Mtrs beyond UP IB signal No 49 of BMCK station.<br>ii) Facing Point No. 21A on UP line of THV station. |
| Between THV - BMCK (DN Line) | i) DN Advanced starter signal No. 18 of THV station.<br>ii) DN IB signal No 20 of THV station. | i) 400 Mtrs beyond DN IB signal No 20 of THV station.<br>ii) BSLB on DN line of BMCK station. |

### 2.3.1 <u>STATION SECTION</u>:

The portion in between UP Advanced starter signal No 45 (at THV end) and BSLB on UP line (at MNGD end) and further, the portion from BSLB on DN line (at THV end) to DN Advanced starter signal No. 48 (at MNGD end) is the station section of BMCK station.

Similarly on 3rd Line the portion in between DN Advanced starter signal No.46 (at MNGD end) and DS Point No.74 at THV end is the Station section of BMCK Station for 3rd Line.

**2.3.2 STATION LIMIT:**

The portion between UP Inner Distant Signal at MNGD end and UP Advanced starter signal No.45 at THV end and Further, the portion between DN Inner Distant signal at THV end to DN Advanced starter signal No.48 at MNGD end is the station limit of the Station.

The portion from UP Inner Distant signal at MNGD end on 3rd line and Dead End at CH: 979.99 at THV end is the station limit for 3rd line.

2.4 **GRADIENT: -**

(a) **FROM THE CENTER OF STATION BUILDING TOWARDS MUNIGUDA (UP LINE):**

| Chainage in meter | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| 0 | 37.00 M | 37.00 M | 1 in 1022.321 F |
| 37.00 M | 527.00 M | 490.00 M | 1in 400 F |
| 527.00 M | 2274.16 M | 1747.16 M | 1 in 162.936 F |
| 2274.16 M | 2615.53 M | 341.37 M | 1 in 492.597 F |
| 2615.53 M | 2815.53 M | 200.00 M | 1 in 188.3 F |
| 2815.53 M | 3435.53 M | 620.00 M | LEVEL |
| 3435.53 M | BLOCK SECTION | ---- | 1 in 5238.095 F |

(b) **FROM THE CENTER OF STATION BUILDING TOWARDS MUNIGUDA (DN LINE)**

| Chainage in meter | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| 0 | 37.000 M | 37.00 M | 1 in 1222.42 F |
| 37.000 M | 683.000 M | 646.00 M | 1 in 400 F |
| 683.000 M | 1392.590 M | 709.59 M | 1 in 108.136 F |
| 1392.590 M | 1787.410 M | 394.82 M | 1 in 117.857 F |
| 1787.410 M | 2499.910 M | 712.50 M | 1 in 1776.808 F |
| 2499.910 M | 2875.530 M | 375.62 M | 1 in 248.590 F |
| 2875.530 M | 3475.530 M | 600.00 M | LEVEL |
| 3475.530 M | BLOCK SECTION | ---- | 1 in 315.96 F |

(c) **FROM THE CENTER OF STATION BUILDING TOWARDS MUNIGUDA ( 3rd LINE)**

| Chainage in meter | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| 0.000 M | 13.963 M | 13.963 M | 1 in 1738.982 F |
| 13.963 M | 403.037 M | 389.074 M | 1 in 520 F |
| 403.037 M | 718.513 M | 315.476 M | 1 in 400 F |
| 718.513 M | 995.530 M | 277.017 M | 1 in 150 F |

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| | | | |
|---|---|---|---|
| 995.530 M | 2135.530 M | 1140.000 M | 1 in 130.659 F |
| 2135.530 M | 2535.530 M | 400.000 M | 1 in 2247.191 R |
| 2535.530 M | 2875.530 M | 340.000 M | 1 in 212.500 F |
| 2875.530 M | 3235.530 M | 360.000 M | LEVEL |
| 3235.530 M | BLOCK SECTION | ---- | 1 in 715 F |

(d) **FROM THE CENTER OF STATION BUILDING TOWARDS THERUVALI (UP LINE)**

| Chainage in meter | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| 0.000 M | 650.000 M | 650.00 M | 1 in 1022.321 R |
| 650.000 M | 822.000 M | 172.00 M | 1 in 102.391 F |
| 822.000 M | 1520.000 M | 698.00 M | 1 in 102.464 F |
| 1520.000 M | 2200.000 M | 680.00 M | 1 in 100.206 F |
| 2200.000 M | 3180.000 M | 980.00 M | 1 in 104.464 F |
| 3180.000 M | 3800.000 M | 620.00 M | 1 in 100 F |
| 3800.000 M | BLOCK SECTION | ---- | 1 in 113.06 F |

**(e) FROM THE CENTER OF STATION BUILDING TOWARDS THERUVALI (DN LINE)**

| Chainage in meter | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| 0.000 M | 650.000 M | 650.00 M | 1 in 1222.42 R |
| 650.000 M | 822.000 M | 172.00 M | 1 in 102.391 F |
| 822.000 M | 1520.000 M | 698.00 M | 1 in 102.464 F |
| 1520.000 M | 2200.000 M | 680.00 M | 1 in 100.206 F |
| 2200.000 M | 3180.000 M | 980.00 M | 1 in 104.464 F |
| 3180.000 M | 3800.000 M | 620.00 M | 1 in 100 F |
| 3800.000 M | BLOCK SECTION | ---- | 1 in 113.06 F |

**(f) FROM THE CENTER OF STATION BUILDING TOWARDS THERUVALI (3rd LINE)**

| Chainage in meter | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| 0.000 M | 600.000 M | 600.00 M | 1 in 1738.982 R |
| 600.000 M | 713.000 M | 113.00 M | 1 in 400 F |
| 713.000 M | DEAD END at CH: 979.99M | 266.990 M | 1 in 104.330 F |

**IBS ZONE**

**i) BISSAM CUTTACK - MUNIGUDA (DN LINE)**

| Chainage in KM | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| From | T0 | | |
| Block Section | KM 299.726 | --- | 1 in 130.16 F |
| KM 299.726 | KM 299.546 | 180.00 M | 1 in 324.32 F |
| KM 299.546 | KM 299.286 | 260.00 M | LEVEL |
| KM 299.286 | KM 298.366 | 920.00 M | 1 in 141.26 F |
| KM 298.366 | KM 297.366 | 1000.00 M | 1 in 170.62 F |
| KM 297.366 | KM 296.446 | 920.00 M | 1 in 178.92 F |

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| | | | |
|---|---|---|---|
| KM 296.446 | KM 295.706 | 740.00 M | 1 in 122.5 F |
| KM 295.706 | KM 294.686 | 1020.00 M | 1 in 126.41 F |
| KM 294.686 | KM 294.866 | 180.00 M | 1 in 125.16 F |
| KM 294.866 | Block Section | --- | 1 in 174.22 F |

**ii) MUNIGUDA- BISSAM CUTTACK (UP LINE)**

| Chainage in KM | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| Block Section | KM 299.566 | --- | 1 in 164.83 F |
| KM 299.566 | KM 299.226 | 340.00 M | 1 in 662.77 F |
| KM 299.226 | KM 298.706 | 520.00 M | 1 in 148.53 F |
| KM 298.706 | KM 298.186 | 520.00 M | 1 in 146.15 F |
| KM 298.186 | KM 297.906 | 280.00 M | 1 in 153.09 F |
| KM 297.906 | KM 297.406 | 500.00 M | 1 in 163.51 F |
| KM 297.406 | KM 296.446 | 960.00 M | 1 in 175.89 F |
| KM 296.446 | KM 295.706 | 740.00 M | 1 in 152.36 F |
| KM 295.706 | KM 294.866 | 840.00 M | 1 in 162.1 F |
| KM 294.866 | KM 294.546 | 320.00 M | 1 in 146.19 F |
| KM 294.546 | Block Section | --- | 1 in 101.15 F |

**iii) BISSAM CUTTACK - THERUVALI (UP LINE)**

| Chainage in KM | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| Block Section | KM 306.000 | --- | 1 in 700 R |
| KM 306.000 | KM 317.292 | 11292 M | 1 in 100 F |
| KM 317.292 | Block Section | --- | LEVEL |

**iv) THERUVALI – BISSAM CUTTACK (DN LINE)**

| Chainage in KM | | Inter distance in meter | Gradient (Falling/Raising/Level) |
|---|---|---|---|
| FROM | TO | | |
| Block Section | KM 305.839 | --- | 1 in 700 R |
| KM 305.839 | KM 317.664 | 11825 M | 1 in 100 F |
| KM 317.664 | Block Section | --- | LEVEL |

**2.5 LAY OUT: -**

i) No. of running lines :- 6 (Six)

ii) No. of sidings :- 5 (Five).

iii) No. of Passenger platforms :- 04 (Four), First High level Passenger Platform of dimension 460M X 9M beside Line No.-1, Second High Level Passenger Platform (Island platform) of dimension 350.53M X 9.93M between Line No.4&5, Third High level Platform of dimension 600M X 10.0M beside Line No.6 and one Rail Level Plat form of dimension 300M X 3.0M beside Track Machine Siding.

iv) No. of goods shed platform :- 01 (One).

v) FOB :- 01, One at CH 28.760M from CSB

**2.5.1 RUNNING LINES, DIRECTION OF MOVEMENTS AND HOLDING CAPACITY IN CSL:**

| DESCRIPTION | CSL | ISOLATION PROVIDED | |
|---|---|---|---|
| | | TOWARDS THV | TOWARDS MNGD |
| Line No.1 (Common Loop Line) | 702 Mtrs. (STR. to STR) | DS | DS |
| Line No.2 (UP Main Line) | 729.7 Mtrs. (STR. to SS) | --- | --- |
| Line No.3 (DN Main Line) | 737 Mtrs. (STR to SH) | --- | --- |
| Line No.4 (DN Loop Line) | 737 Mtrs. (STR to SS) | DS | Sand Hump |
| Line No.5 (3rd Main Line) | 767 Mtrs. (STR to STR) | --- | --- |
| Line No.6 (3rd Loop Line) | 739 Mtrs. (STR to STR) | ORL | ORL |

**DIRECTION OF MOVEMENTS: -**

A) Trains arriving from MUNIGUDA end are UP trains.
B) Trains arriving from THERUVALI end are DN trains.

**2.5.2 NON-RUNNING LINES AND CSL:** -

| DESCRIPTION | CSL | Taken OFF | Exit | Operation |
|---|---|---|---|---|
| TM Siding (THV end) | 354 Mtrs (SH to SS) | Line No. 1 | One way | From VDU |
| Banker Siding (THV end) | 70 Mtrs. (SH to SS) | Line No. 6 | One way | From VDU |
| Goods Siding | 84 Mtr (SH to SH) | Line No. 1 | Both Way | From VDU |
| Shunting Neck (MNGD end) | 63 Mtr (SH to SS) | Line No. 1 | One way | From VDU |
| Shunting Neck (THV end) | 105 Mtr (SS to SH) | Line No. 5 | One way | From VDU |

**2.5.3 ANY SPECIAL FEATURES IN THE LAYOUT: -**

**NIL**

**2.6 (i) LEVEL CROSSINGS: (STATION SECTION): NIL**

**(ii) LEVEL CROSSINGS: (BLOCK SECTION)**

| SL No. | Location | K.M. & No. | Normal Position | Class | Type | Operation | Communication |
|---|---|---|---|---|---|---|---|
| 1. | Between BMCK-MNGD | 290/1(UP) 290/34-291/2 (DN) (RV-228) | Closed | 'C' | Non-Interlocked | Winch operated Lifting barrier | Magneto telephone with SM/MNGD |
| 2. | Between BMCK-MNGD | 292/3-5 (UP) 292/4-6 (DN) (RV-229) | Open | 'Spl' | Inter locked | Winch operated Lifting barrier | Magneto telephone with SM/MNGD |
| 3. | Between BMCK-MNGD. | 293/1-3 (UP) 293/2-4 (DN) (RV-230) | Closed | 'C' | Non-Interlocked | Winch operated Lifting barrier | Magneto telephone with SM/BMCK |

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Train Actuated Warning Device has not provided at the above Level Crossing Gates.
(Working of Level Crossing Gate is detailed in appendix 'A')

## 3.0 SYSTEM AND MEANS OF WORKING:-

(Rule No:- Chapter XIV of G&SR, Chapter III, Chapter IVB & Chapter VI of BWM)

| | | | |
|---|---|---|---|
| i) | **System of working** | **:-** | Absolute Block system. |
| ii) | **Type of block instrument** | **:-** | Block Panel with SSBPAC (D) is provided for Section BMCK-MNGD (Double Line), BMCK-MNGD for 3rd line & DLBI for section BMCK-THV (Double Line). |
| iii) | **Block Telephone** | **:-** | Provided with respective Block panels & Block Instrument for BMCK-MNGD and BMCK-THV Sections. |
| iv) | **Staff responsible for their operations** | **:-** | SM on Duty. |
| v) | **Custodian of keys** | **:-** | SM on Duty. |

## 4.0 SYSTEM OF SIGNALLING AND INTERLOCKING: -

### 4.1.1. STANDARD OF INTERLOCKING AND TYPE OF SIGNALLING: –

The station is provided with Standard III interlocking with Multiple Aspect Color Light Signaling and Dual LVCD Axle Counters. All the points and signals are operated from VDU by on duty Station Master. Stand by VDU is also provided. The Home signals and IB Home Signals are interlocked with respective Block Panels. GR 3.08(4) (b) governs the aspect and indications of the signals respectively. The station has no end cabins.
Minimum equipment of signals – Distant, Inner Distant, Home, Starter and Advanced starter in either direction. As Shunt signals have been provided below all the starter signals, the starter signals are released by respective Advanced starter signals, hence starter signals cannot be used for shunting purpose.

### 4.1.2. STATION MASTER'S OPERATING VDU: -

The Station is provided with central Electronic Interlocking (EI) system. All signals and points are electrically operated from the VDU provided at SM's Office. A stand by VDU is also provided to switch over the system in case of failure of working VDU. Calling-on signals are provided below Home signals and starter signals (i.e. in both UP & DN directions). Central VDU is provided in the Station Master's office to electronically control all signals and points etc.
The VDU is provided with SM's KEY User name and password which shall always remain in personal custody of SM on duty.
**NOTE:** All operations and Indications shall be carried out through VDU only**.** The details of operation from VDU is given under APPENDIX-'B'.

### 4.1.3. AXLE COUNTERS IN LIEU OF TRACK CIRCUITS: -

All the lines including point zone, between Home and Advanced starter signals on either direction are provided with Dual detection **MULTI SECTION DIGITAL AXLECOUNTERS** (**MSDAC**) track sections in lieu of Track circuits. In addition, there are short length Dual MSDAC track sections in advance of Advanced starter signals and in rear of Home signals. The position of the running lines including point zones i.e. occupied/clear is indicated in the illuminated diagram at the Station Master's office. Normally there will be no indication of Axle counter detection circuits. It shows 'RED'

when the line is occupied and 'WHITE' in VDU when the line is clear provided the route is set.

**4.1.4. AXLE COUNTER**:

Block sections between BMCK-MNGD, BMCK-THV are monitored by Dual Digital axle counter system for Last Vehicle Verification. Dual Digital axle counters along with associated accessories are provided at either end of the Block section.

**BMCK- MNGD IB Section {45 IBXT(UP IB)}**:
A Pair of dual digital axle counter is provided between MNGD and IBS. One beyond UP Advanced starter signal No.45 of MNGD & another 400 M beyond UP IB Home signal No.49 of MNGD on UP Line for counting the axles IN and for counting the axles OUT to indicate whether the IB section is clear of trains or not.

**UP IBS - BMCK Section [UDAXT (BMCK)]**:

Another Pair of dual digital axle counter is provided between UP IB Home Signal and BISSAM CUTTACK. One just beyond UP IB Sig No.49 of MNGD & another 180 M beyond UP Home Signal of BISSAM CUTTACK on UP line for counting the axles IN and for counting the axles OUT to indicate the block section is clear of train as well as to verify the last vehicle of the incoming train.

**BMCK –MNGD IB Section [48 IBXT (DN IB)]**:

A Pair of Dual Digital axle counter is provided between BISSAM CUTTACK and DN IBS of BMCK. One beyond DN Advanced starter signal of BISSAM CUTTACK & another 400 M beyond DN IB Home signal No.50 of BMCK on DN Line for counting the axles IN and for counting the axles OUT to indicate whether the IB section is clear of trains or not.

**DN IBS - MNGD Section [DRAXT(MNGD)]**:

Another Pair of Dual Digital axle counter is provided between DN IB Home Signal No.50 of BISSAM CUTTACK and MNGD stations. One just beyond DN IB Sig No.50 of BMCK & another 180 M beyond DN Home Signal of MNGD Station on DN line for counting the axles IN and for counting the axles OUT to indicate the block section is clear of train as well as to verify the last vehicle of the incoming train.

**MNGD-BMCK (BAXT) (3rd Line):**

A pair of Dual Digital Axle counter is provided, one beyond UP Advanced starter Signal No. 47 of MNGD on 3rd line between MNGD-BMCK and another beyond DN Advanced Starter Signal No. 46 of BMCK on MNGD-BMCK 3rd Line for counting the axles 'IN' and for counting the axles 'OUT' to indicate whether the block section is clear of trains as well as to verify the last vehicle of the incoming train.

**BMCK-THV IB Section {45 IBXT(BMCK)}**:

A Pair of dual digital axle counter is provided between BMCK and IBS. One beyond UP Advanced starter signal No.45 of BMCK & another beyond 400 M of UP IB Home signal No.49 of BMCK on UP Line for counting the axles IN and for counting the axles OUT to indicate whether the IB section is clear of trains or not.

**UP IBS – THV Section [UPLVV (THV)]**:

Another Pair of dual digital axle counter is provided between UP IB Home Signal and THERUVALI station. One just beyond UP IB Sig No.45 of BMCK & another 180 M beyond UP Home Signal of THERUVALI on UP Line for counting the axles IN and for counting the axles OUT to indicate the block section is clear of train as well as to verify the last vehicle of the incoming train.

**THV – BMCK IB Section [18 AXT (DN IB)]**:

A Pair of Dual Digital axle counter is provided between THERUVALI and DN IBS of THV. One beyond DN Advanced starter signal of THERUVALI & another 400 M beyond DN IB Home signal No.20 of THV on DN Line for counting the axles IN and for counting the axles OUT to indicate whether the IB section is clear of trains or not.

**DN IBS – BMCK Section [DN LVV (BMCK)]**:

Another Pair of Dual Digital axle counter is provided between DN IB Home Signal No.20 of THERUVALI and BMCK stations. One just beyond DN IB Sig No.20 of THV & another 180 M beyond DN Home Signal of BMCK Station on DN line for counting the axles IN and for counting the axles OUT to indicate the block section is clear of train as well as to verify the last vehicle of the incoming train.

The position of block section i.e. clear/occupied is reflected on the reset box panel and VDU provided in the Station Master's office which shows 'GREEN' when the block section is clear and 'RED when the block section is occupied. Whenever a train enters in to the Block section, "Block Section Clear" indication 'GREEN' for the particular block section disappears and 'RED' indication appears.

After complete arrival of the train the 'RED' indication will disappear and 'GREEN' indication will appear. If after the complete arrival of the train the 'RED' indication does not change to 'GREEN' it should be assumed as Block Instrument failure for the particular section and necessary action as per GR14.13 is to be followed. The Axle counters are interlocked with the respective Block Instruments for that section. If Axle counters fails, advanced starter signal/IB signal shall not come to 'OFF' and the concerned instrument shall remain locked in last operated position.

A resetting arrangement for resumption of the system in case of failure of axle counter has been provided in the SM office of the adjacent Block stations after being assured by both the SM that the last vehicle has arrived complete at the receiving station by exchanging Private Number then resetting to be complied with. (Details of resetting procedure given in annexure –B).

**NOTE:**

Before taking 'OFF' reception signals for UP and DN direction, the SM on duty should ensure that the entire route including overlap and berthing portion is clear of all obstructions by observing the Track indication/Axle Counter indication. The indication of Track section/Axle counter will exhibit Red light when track is occupied and white light when track is clear. There will be no track indication when any route is not set.

### 4.1.5. POSITION AND OPERATION OF POINTS: -

The positions of all points are shown in station Working Rule Diagram and also on VDU. All points are operated through VDU by Station Master on duty. All cross over points on running line are independently worked by electrical point machine and have built in locking and detection arrangement.

**4.1.6. ELECTRICAL KEY TRANSMITTER (EKT)**:-

EKTs with crank handle keys are provided at both end locations for the operation of points in case of failure of point motors. The keys for the crank handle keys are transmitted electrically to the crank handle locations for operating the points by crank handles.

**4.1.6.1. IBS:** IBS is provided between BMCK – MNGD & BMCK – THV Section. Details of working is given in Appendix 'F' of this SWR.

**4.1.6.2. POINTS AND TRAP INDICATOR:** NIL

**4.1.6.3. REPEATER (BANNER TYPE):** NIL

**4.1.7. CALLING ON SIGNALS:-**

Miniature colour light Calling-on signals are provided below the Home signals and starter signals in terms of GR.3.13 (6) (b). A Calling-on signal shows no light in the 'ON' position and Yellow Light when taken "OFF". A calling-on signal, will be taken 'OFF' for reception of a train when the Home signal above it cannot be taken 'OFF' due to failure or any other reason or for admission of train on a blocked line. Before taking 'OFF' Calling on signal during failure of track circuit/ Axle counter the route and clearance of the track over which the train will be admitted, must be checked physically by SM on duty. Calling-on signal below Home signal clears in 60 sec. But calling-on provided below starter signal clears without any time delay. But SM on duty must ensure that the train has stopped at concerned starter signal.

NOTE: A train shall not be made run through when admitted on calling-on signal.

**4.1.8. SHUNT SIGNALS: -**

Shunt signals at top point viz., SH7 & SH9 at MNGD end and SH10 at THV end have been provided for back shunt movement. SH11 on Shunting neck is provided at MNGD end. SH14 on Track machine siding, SH8 on shunting neck on 3rd line, SH12 on banker siding are provided at THV end. SH21, SH23, SH29, SH31 below starter signals at THV end and SH22, SH24, SH28, SH30 & SH34 are also provided below starter signals at MNGD end. Independent SH32 on UP line at MNGD end and SH25, SH27 on DN line at THV end of the yard provided for yard shunting. SH17, SH18 & SH19 are also provided on goods siding takes off from L/1 for shunting into/from goods siding. SH19 is released by SH21. Using of starter signals is prohibited for shunting purpose in this yard.

**4.1.9. ANTI COLLOISION DEVICE: -** NIL

**4.1.10. EMERGENCY CROSSOVER:-** NIL.

**4.1.11. LC GATE OPERATION:-** Given in Appendix 'A'.

**4.1.12. CRANK HANDLE:**

When any point fails to operate normally by the Route Setting operation through VDU, it is inevitable to operate the points with crank handle. The SM on duty shall personally ensure clamping and padlocking of all facing and trailing points on the route. Crank handle keys are interlocked with signals and interlocking system. When points become defective, the signals controlling these points shall be considered defective and

vice-versa and the procedure for use of crank handle for motor operated points shall be followed as per operating manual para-2.19.

| CRANK HANDLE | CONTROL POINTS | IN LOCATION BOX |
|---|---|---|
| CH1 | 51A/B | IN UP CH LOC. No.1 |
| CH2 | 52 A/B, 54 A/B | IN DN CH LOC. No.1 |
| CH3 | 53 A/B | IN UP CH LOC. No.1 |
| CH4 | 56 A/B | IN DN CH LOC. No.2 |
| CH5 | 55 A/B | IN UP CH LOC. No.2 |
| CH6 | 58 A/B | IN DN CH LOC. No.4 |
| CH7 | 57 | IN UP CH LOC. No. 1 |
| CH8 | 60 A/B | IN DN CH LOC. No.3 |
| CH9 | 62 A/B | IN DN CH LOC. No.4 |
| CH10 | 61 A/B | IN UP CH LOC. No.2 |
| CH11 | 64 A/B | IN DN CH LOC. No.3 |
| CH12 | 66 A/B | IN DN CH LOC. No.3 |
| CH13 | 68 A/B, 70 A/B | IN DN CH LOC. No.5 |
| CH14 | 72 | IN DN CH LOC. No.2 |
| CH15 | 74 | IN DN CH LOC. No.1 |

These crank handle keys are interlocked with the signaling and interlocking system at this station and normally locked inside the EKT instrument at the respective Crank Handle Locations. Crank handle keys can be taken out only when concerned signals are not taken 'OFF' and the route is not locked for whatever reasons. Crank Handle key can be released by SM by tracking the mouse pointer on to the concerned crank handle button icon. This will enable two options to be displayed on the menu i.e. Crank handle Transmit control and Crank Handle Release control. For transmitting the crank handle key, SM should click the Crank handle 'TRANSMIT' control option. After transmission the KEY IN indication will start flashing, now the key can be extracted from the EKT. After extracting the key from the EKT, the KEY IN indication will disappear. When the keys are taken out no signal can be taken "OFF" over the particular route on the points nominated by that Crank Handle. This key can be electrically transmitted to both ends locations of the yard for manual operation of the defective points.

SM on duty shall personally ensure the clamping and padlocking of all facing and trailing points. An emergency Crank handle register shall be maintained by the SM on duty at the station as per Para 2.19 of the Operating Manual. Correct setting, clamping and padlocking of the points devolve on the SM on duty. The cases of failure of motor point should be promptly reported to the concerned signal maintainer/SSE (Signal) for immediate rectification.

**4.1.13. EMERGENCY CRANK HANDLE RELEASE DURING FAILURE OF BOTH EI (ACTIVE & STANDBY) SYSTEMS:**

When both the EI system fail to operate due to power failure or whatever be the reason, all the crank handles are released at a time and the SM on duty can set the required point/points through Crank handles manually by extracting the key/ keys from EKT provided in the location boxes. The signaling staff i.e. SSE/JE/SIG or ESM shall be intimated immediately regarding the failure for rectification of the same.

**4.1.14. EMERGENCY CRANK HANDLES RELEASE WHEN ROUTE INDICATION COULD NOT BE CANCELLED:**

Please refer Para No.5.3 of Appendix B of this SWR for operation.

**4.1.15. EMERGENCY CRANK HANDLE RELEASE DURING FAILURE OF VDUs (ACTIVE and STANDBY):**

Please refer Para No. 5.3.1 of Appendix B of this SWR for operation.

**4.1.16. EMERGENCY POINT OPERATION**:

Emergency point operation facility is provided to operate the point from the VDU in case of failure of point controlling Axle Counter track. Before doing the emergency operation, the Emergency Point Operation Key is to be made “KEY IN” by clicking the KEY IN menu. The user name and password is be logged in. On clicking the concerned point icon, a pop-up menu is displayed carrying four options: 1) Normal 2) Reverse 3) Emergency Normal 4) Emergency Reverse. For emergency operation of concerned point, drag the pointer to either emergency normal or emergency reverse whichever is desired. A normal or reverse flashing indication will appear and the indication will be steady after the point is set to Normal or reverse, whichever is desired. After the completion of Emergency point operation, the key is to be KEY OUT by clicking KEY OUT menu. The user name and password is to be given for KEY OUT also. This action will be recorded in a counter. Each operation of emergency point operation shall be recorded in the station diary and in the Register meant for this purpose.

***Note:*** *Before resorting to this operation SM on duty shall verify that the point zone is clear of any vehicle occupying the track section and the same is clear of any obstruction.*

**4.1.17. EMERGENCY ROUTE RELEASE INDICATION (WHITE):**

The Electronic interlocking is based on the principle of ‘DEAD APPROACH LOCKING’. As such when a route is set and signal is taken ‘OFF’ on the route, the route gets locked. Normally the route is released by the passage of the train over the route.

When it becomes necessary to alter the route after the signal has been taken ‘OFF’ vide SR 3.36.02(a), click on the concerned signal. After clicking by the left button on the mouse a pop-up menu will appear. Click on the cancellation menu (Main/Calling-on) of the concerned signal, the signal will immediately go to ON aspect. After doing so click on the route release menu, the route locked indication will start flashing for 120 seconds. After completion of 120 seconds, along with the White strip of light will disappear suggesting the route has been released. This action will be recorded in a counter. The counter will register the next number for each and every such action. In case the route illumination (white strip lights) does not disappear, it suggests that the route is not released/cancelled. In such case the concerned S&T staff should be advised immediately to release the route.

Each operation of emergency cancellation of route should be recorded in the emergency route release counter register by registering the next higher number. All such operations and the new number should be recorded in the station diary Veeder counter register and in the train signal register.

**4.2. CUSTODY OF RELAY ROOM KEY AND PROCEDURE FOR ITS HANDING OVER AND TAKING OVER BETWEEN STATION MASTER AND S&T MAINTENANCE STAFF**: -

Custody of Relay room key and procedure for its handover and taking over between SM & S&T, the staff has to follow the procedure a per para No.13.16 of

Operating Manual (2015), JPO/02/2012 dated 29.08.2012, RB JPO issued No.2021/Sig/21/Safety Performance, dated.10.06.2023.

The provision of double lock in relay room includes all relay rooms, huts, goomties, LC Gate huts/ goomties within station limits and cabins provided as an extension of station relay room for housing signaling gears in station yard.

The Relay room & extended relay rooms within the station limits shall have double locking system of operating and S&T Locks. One Godrej Lock shall be provided on the door of Relay Room by the Station Master. This lock is named as operating lock. The key shall be kept in the safe custody in the key- box with the SM on duty. Likewise, one Godrej lock shall be provided on the door of Relay Room by the Signal Maintainer/ Signal Supervisor of the Station /Section.

Names of the S&T staff authorized for opening of Relay Room is to be entered in the first page of Relay Room Key Register and jointly certified by SSE /Signal In-Charge and TI In- Charge of the Section. In emergency, if any S&T staff other than authorized wants to open Relay room, he must inform DSTE through Signal Fault Control. Signal Fault Control shall convey the permission of DSTE to SS/SM by giving Signal Fault Control order number.

Whenever relay room is to be opened either for scheduled maintenance or during failures or for other maintenance activities/construction works. The concerned Maintainer/Signal Supervisor will inform SM on duty for opening of Relay Room with reason. SM on duty will verify his identity from the list of authorized S & T Staff recorded in the first page of Relay Room Key register or as advised by Signal Fault Control in emergency. SM shall give the key of operating lock to S&T staff, after the entry is made in the Relay Room and also with Red Ink in TSR. Relay Room key shall not be handed over by SM on duty to any Group D staff of S&T department. On completion of work, the concerned Signal Maintainer/ Signal Supervisor shall properly close Relay Room door and lock it with both the locks and then return the key of operating lock to the SM on duty making the entry in the relay room register.

When the key of Operating Lock is returned by S& T staff to SM on duty, he shall first verify the Relay Room for proper locking and then keep the key in safe custody and acknowledge it on the Relay-Room key register. If the relay room key is handed over to the Signal staff regarding the interference in safety gears the train shall be piloted in and out.

**For attending Failures of S& T gears within relay Rooms, the following steps shall be taken:**

Entry to be made in S&T failure register by SM on duty and failure Memo has to be issued to S&T staff. S&T staff shall not take the Relay Room Key for attending failures and open the Relay Room unless the failure is recorded in Signal failure register. If disconnection is required, Disconnection Memo has to be given by S& T staff to SM on duty. Failure Memo should be acknowledged and entry in relay room key register to be made by S& T staff before obtaining Station Master's key.

Relay Room key for Schedule maintenance shall be taken once in a calendar Month during monthly inspection by Sectional Supervisor. Relay room can be opened by following above procedure for special maintenance activities like cable insulation testing, block/ disconnection memos, selection/ locking table testing, maintenance work inside relay room by Electrical and Engineering staff, during failures, data logger

resetting and inspection by Divisional and Headquarter officials, Track Circuit adjustments & voltage monitoring during monsoon and whenever required during rains. Works required by S& T Construction & open line staff for preparatory works and during commissioning. In each such case, the Construction Staff Shall follow the detailed guidelines issued regarding working on signaling gears under the charge of open line.

In case of emergencies such as fire, flood, earthquake etc., Open Line Section Engineer (Signal) / Signal Maintainer & SS/SM shall jointly decide the need for opening the Relay Room. Section Engineer Signal, HQ at Divisional Control Office and Section controller shall be advised respectively. In case of communication failure during such emergencies, Open Line Signal Maintainers/ Supervisors and SS/SM on duty shall jointly decide the need for opening the Relay Room and communicate later on to respective controls. In case key is lost /misplaced, it shall be reported to S&T control as well as section control for either lock. In normal course the spare key with respective custodians shall be used. In emergency situation, lock may be broken under advice to Section Control as well as S&T control. New lock shall be procured and provided.

In case SM on duty comes to know of relay Room opening by unauthorized means or by unauthorized person or by any Group-D' Staff, the signaling system shall be suspended by him and matter immediately reported to Section Controller for necessary action. Senior section Engineer/ Signal & TI of the respective section will check the station records of relay room opening during their inspections and cross check it with data logger/counter reading if provided. Discrepancy, if any, shall be immediately inquired into and advised to Sr DSTE & Sr DOM by numbered control message from the station immediately for further action.

### 4.3. POWER SUPPLY: -

i) The station works on 230V single phase power supply. The normal power supply is from the auxiliary transformer (25KVA Rating) connected to OHE traction distribution system.
ii) Standby power supply: Odisha State Electricity Board Supply.
iii) An Auto changeover switch is provided in the Station Master's Office with the three power supplies viz. UP AT, DN AT and Local supply for automatic selection from available source or changing the switch position to the required supply manually. A luminous indicator provided above the circuit breaker for each supply indicates the availability of the supply.
iv) Normally the switch is kept in auto mode. Whenever power block is to be given, the on duty SM must ascertain that power is available on the other AT and local power supply. If power block is given to the UP line, DN AT must be available and vice-versa.
v) In case of failure of one of the AT Supply without any power block, the on duty SM has to check whether the circuit breaker has tripped (Three circuit breakers are provided in the changeover switch board one for each supply and their normal position is Up and when tripped it goes down). In case of failure of both AT supplies, the Local supply shall be utilized by operating the switch if required. If the circuit breaker is tripping even after resetting, no attempt shall be made to hold it by any means and a message shall be given to concerned SSE [Elect.] and SSE/PSI [OHE] for prompt rectification.
vi) For IPS system which provides supply to EI, a manual changeover switch is provided at SM's Office with the two power supplies viz., selected supply from CLS panel and State power supply for changing the switch to required supply position manually.
vii) Normally manual changeover switch is kept in selected supply from CLS panel position, if in case any emergency, changeover switch is changed to local supply position by on duty SM.

viii) There is a remote monitoring ASM box provided at the Cabin to monitor the health of IPS.

**REMOTE MONITORING ASM BOX:** Remote monitoring ASM Box gives alarm to the ASM for the following fault conditions:-

a) 50% depth of discharge (DoD) of battery. In this condition audio/visual alarm comes, which can be acknowledged with audio cut-off.
b) 60% DOD, which warns for emergency. The alarm for this condition is same as for condition 1.
c) 70% DOD, which signals system, shut-down. In this condition signal feed is cut-off and all DC-DC converters continue working. Audio alarm continues till power supply is restored.
d) Any of the module fails, which calls for 'call S&T'.
e) Whenever there is a failure of power supply in AT or Local the SM shall take prompt action to inform to all concerned for the rectification. The SM himself, during his daily checks, shall test the availability of power supply AT and Local and make an entry in the Station Diary duly initiating action for rectification of failure, if any.

## 5.0 TELECOMMUNICATION FACILITIES: -

(i) Telephone attached with Block Panels of BMCK-MNGD and BMCK-THV Block sections.
(ii) Station to Station fixed telephone (Hot line) is provided
(iii) Station is provided with Auto telephone connected with Railway Exchange.
(iv) BSNL/CUG telephone is provided.
(v) The station is connected to Balangir- Singapur 'B' cabin control circuit by a Control telephone.
(vi) Station to station 25 Watt VHF communication is provided.
(vii) Traction Power Control telephone is provided.
(viii) Telephone communication is provided between UP IBS post at KM 313.440 and BMCK station and DN IBS post at KM 297.540 and BMCK Station.
(ix) Telephone is provided between Station and both end crank handle locations.
(x) Telephone is provided between Station and both end MSDAC resetting LV Box locations.
(xi) Telephone is provided between Station and L.C. Gate RV-230 at KM 293/1-3 (UP & KM.293/2-4 (DN).

**NOTE:**

(i) For obtaining line clear, VHF should be used as a last alternative and not as a sole means of communication.
(ii) VHF and Walkie Talkie sets should not be used for unnecessary discussions with Loco Pilots, Guards or any other staff.

## 5.1 FAILURE OF COMMUNICATION: -

The on duty SM shall use the above electrical communication instruments stated in Para-5.0 from item No. (i) to (vi) strictly in order of preference for obtaining/granting line clear vide SR 14.01.01. In case of failure of any of the above means of communication between the adjacent block stations the SM on duty shall work vide SR 6.02.06. In the event of total failure of communications SR 6.02.03 shall be observed for working the train between section BMCK-MNGD, BMCK-THV and SR 6.02.04 . During failure of signal, inter-locking, points, block instrument telephone etc. the S&T staff should be informed for rectification.

S.SAINI
**DSTE /SBP**

LINGARAJ GARTIA
**DOM(G)/SBP**

## 6.0 SYSTEM OF TRAIN WORKING: -

The movement of trains is controlled by Section Controller on duty whose orders shall be complied with, provided they do not contravene any General Rules, Subsidiary Rules, Station Working Rules, Block Working Manual and other safe working instructions issued from time to time. In the event of suspension of control working, the Station Master on duty shall work independently in conjunction with the Station Master of adjoining block station and shall be responsible to ensure that there is no undue delay to train operation in general.

## 6.1 DUTIES OF TRAIN WORKING STAFF: -

Details of duties of operating staff are mentioned in Appendix 'D' of the SWR.

### 6.1.1 TRAIN WORKING STAFF IN EACH SHIFT: -

The following are the complement of train working and operating staff provided at this station to work in each shift.

| SL. NO. | DESIGNATION | ROSTER | NO. OF STAFF IN EACH SHIFT | HRS. OF DUTY |
|---|---|---|---|---|
| 1. | SS. | Continuous | -- | 09 hrs. |
| 2 | SM. | Continuous | 01 | 08 hrs |
| 3. | PM 'B' &PM'A' | Continuous | 01 | 08 hrs. |

The above staff shall work as per the rosters issued by Sr.DPO/SBP from time to time and these rosters shall be displayed in the SS's office.

### 6.1.2 RESPONSIBILITY OF ASCERTAINING CLEARANCE OF THE LINES AND ZONES OF RESPONSIBILITY: -

The SM on duty is responsible to ascertain the clearance of the nominated line (GR.14.10).

### 6.1.3 ASSURANCE OF STAFF IN ASSURANCE REGISTER: -

All staff before taking up independent charge of their duties at this station shall make a written declaration in the assurance register that they have read and thoroughly understood the system in force and must sign in such declaration vide SR 5.01.02.

No Railway servant shall be entrusted with any duty involving safety of the public unless the station in-charge is satisfied that the concerned staff is competent for the post. No Railway servant unless duly examined and certified shall be allowed to work the points and signals. The SS is responsible to see that all the staff are conversant with the Station Working Rules and their signatures obtained in the Assurance register after he is satisfied that they have thoroughly understood the working rules of the station. In case of Group 'D' staff, their signature/thumb impression must be obtained after explaining fully about their duties and responsibilities.

The station superintendent is responsible personally for maintaining the Assurance Register and for obtaining declaration of the staff working under him. The Assurance Register must be maintained in two parts, one for Group 'C' and the other for Group 'D' staff.

A duplicate copy of the Assurance Register must be maintained and kept in personal custody of the Station Superintendent.

The declaration shall be renewed in the following cases: -

(i) Whenever there is a change in the Station Working Rules.
(ii) For any staff who have not worked at the station or were away from the station for a period of 15 days or more.

**6.2 CONDITIONS FOR GRANTING LINE CLEAR: -**

a) The conditions laid in GR 8.01(1)(a),(b)(c), 8.01(2)(b),8.03(2),(a),(b),(c) (ii) & 8.03(1)(a),(b)(c )(ii) shall be complied with the SM on duty before line is considered clear and line clear is granted.

b) Before granting line clear for a train SM on duty shall personally ensure that the reception signals pertaining to a train are in the 'ON' position and burning properly vide GR 3.49(4).

**A) For double line Section:- (BMCK-MNGD) and (BMCK-THV):**

Before granting line clear for a train, the SM on duty shall ensure that-

i) The whole of the last preceding train has arrived complete, inside the outermost facing point or BSLB.
ii) All necessary signals have been put back to 'ON' behind the said train.
iii) The line is clear up to the BSLB provided on UP line for UP trains between BMCK-MNGD and BSLB provided on DN line for DN trains between THV-BMCK.

**B) For Single Line section:- (BMCK-MNGD):**

Before granting line clear for a train, the SM on duty shall ensure that-

i) The whole of the last preceding train has arrived complete.
ii) All necessary signals have been put back to 'ON' behind the said train.
iii) Block section is clear of running of trains in the direction towards the block station for which such line clear is being given.
iv) The line is clear up to DN Advanced Starter No.46 for UP trains.

**C) OUTLYING SIDING: - NIL**

**6.2.1. ANY SPECIAL CONDITION TO BE OBSERVED WHILE RECEIVING OR DESPATCHING A TRAIN: -** NIL

**6.2.1.1. SETTING OF POINTS AGAINST BLOCKED LINE: -**

All Points shall normally be set for the straight except when authorized by special instruction. When a running line is blocked by stable load, wagon, vehicle or by train which is to cross or give precedence to another train or immediately after arrival of a train at the station, the points in rear should be set against the blocked line except when shunting or for any other movement towards the blocked line is required to be done vide 3.51.06(a). if all the lines at the station happen to be blocked then SR.3.51.06(b) will be followed.

**<u>Safety Point Alarm Unit (SPAU)</u>**

A Safety point Alarm unit is provided on the VDU table with different indications:

1. On complete arrival of a train at the station, the SM has to set the points immediately against the occupied line.
2. In case the SM forgets to alter the points, after a time gap of 02 minutes, an audible buzzer will be heard from this unit along with the 'Red' indication of the line on which the train has arrived.
3. The SM shall then press 'ACK' button to mute the buzzer, and immediately set the required points against the line on which the train has arrived.
4. On setting the points against the occupied line, the 'Red' indication will disappear. If all the lines of a station happen to be blocked, when the line clear has been granted to a train, the points should be set for the line occupied by a stabled load or a goods train in that order so that, in case of mishap, the chance of causalities are minimum[ Refer SR 3.51.06(b)]. In case of all the lines are occupied by coaching trains, points should be set for a loop line to negotiate with the speed of incoming train would be reduced which in turn, would minimize the consequences/casualties. While doing so, points may be set for a loop line occupied by a train, if any, whose engine is facing the direction of approach of the incoming train rather than for a loop line occupied by a train where a passenger coach, will, in the case of collision, receive the impact.

The above precautions shall be taken in addition to the observance of other precautions [Refer SR 5.04.01 & SR 5.23.01].

### 6.2.1.2. RECEPTION OF TRAIN ON BLOCKED LINE: -

(The SM on duty shall comply with the instructions laid down in GR 5.09 and SRs thereto.)

Whenever trains are to be admitted on an obstructed line the SM on duty shall take off Calling – on signal. If Calling – on signal failed, authorize Loco Pilot of the train with form T/509 indicating the reason for such admission, the line number and the nature of obstruction on that line.

Before handing over the authority the SM on duty shall ensure correct setting clamping and padlocking of both facing and trailing end of the concerned route vide SR 3.69.03. A stop hand signal shall be exhibited by the SM on duty at a distance of not less 45mts. from the point of obstruction to indicate to the Loco pilot as to where the train shall be brought to a stand.

### 6.2.1.3 RECEPTION OF TRAIN ON NON-SIGNALLED LINE:

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on a Non-signaled line, the SM shall ensure that,

i. The train is brought to a stand at the first stop signal.
ii. The line on which it is intended to receive the train is clear up to the trailing points or up to the place at which the train is required to come to a stand.
iii. All points over which the train has to pass are correctly set, the facing and trailing points are clamped and padlocked.
iv. The Loco Pilot is authorised to pass the approach stop signals at "ON" through a written authority to be delivered by a competent railway servant who shall pilot the train on the non-signalled line. [Refer GR 5.10].

### 6.2.1.4 DESPATCH OF TRAINS FROM NON-SIGNALED LINE:

In case of despatch of a train on non-signaled line the SM's shall follow GR 5.11 and SR thereto.

6.2.1.5 **DESPATCH OF TRAINS FROM LINE PROVIDED WITH COMMON STARTER SIGNAL:** N/A

**6.2.1.6 SPECIAL RESTRICTIONS**:

i) While shunting of gradients towards UP Advanced starter signal no.45 and DN Advanced starter signal no. 46 & 48, an engine is to be attached towards the falling side of the gradient. GR 5.20(b) to be strictly followed.

ii) Due to 1 in 100 falling gradient on UP line near UP IB signal, no goods train to be allowed in the block section in rear, if the block section ahead is occupied by a Passenger carrying train.

iii) Due to 1 in 146.15 rising gradient beyond UP IB signal No. 49 of MNGD (Km. 297.550), no passenger train to be allowed in the block section in rear, if the block section ahead is occupied by a loaded Goods train.

**6.2.1.7 SPECIAL INSTRUCTIONS: -**

(i) After any non-signal movement has taken place over point (s) operated by an electric point machine, whether in the facing or trailing direction the SM on duty shall operate point(s) to normal and reverse setting for the purpose of testing the point. After the SM has ensured that indication regarding the normal and reverse setting are correctly available on the panel, further movement may be permitted over such point(s).

(ii) For receiving a train on loop lines Station Master on duty shall ensure that the ORL/Sand Hump is clear of all obstructions even when the ORL/Sand Hump falls in the trailing direction.

(iii) Ballast/Material train shall not be allowed to be pushed into the block section BMCK-THV as per SR 4.62.06(f)

(iv) Motor trolleys on following line clear shall not be allowed between BMCK-THV vide SR 15.25.03(b)(xiii).

(v) Material trolley working on Form-B shall not be allowed between BMCK-THV due to sharp curves and steep gradients. (Refer SR 15.27.06)

**6.3 CONDITIONS FOR TAKING 'OFF' APPROACH SIGNAL: -**

Reception of trains is governed by General Rule 3.36, 3.38, 3.40, 4.17, Subsidiary Rule 3.42.02 (a) (iv), 3.42.03, 3.36.02, 3.36.04 and other relevant provisions of General and Subsidiary Rules, Block Working Manual and Station Working Rules of the station to be followed.

Adequate distances to be kept clear vide General Rule 3.40(3) (b) for reception of trains.

**A. CLEARANCE OF ADEQUATE DISTANCE**: -

To take off the home signal for admission of a train the adequate distance (signal overlap) as mentioned below shall be kept clear: -

| Sl. No. | Line No. | UP TRAINS | | DN TRAINS | |
|---|---|---|---|---|---|
| | | FROM | TO | FROM | TO |
| 1 | Line No.1 (Common Loop) | UP Starter Signal No. 21. | Up to DS-72 or Up to UP Adv. starter signal No.45. | DN Starter Signal No.34. | Up to DS 57 or up to DN Adv. starter Signal No.48. |
| 2 | Line No.2 (UP Main) | UP Starter Signal No. 23. | Up to UP Adv. starter Signal No.45. | -- | -- |
| 3 | Line No. 3 (DN Main) | --- | --- | DN Starter Signal No.30 | Up to DN Adv. starter signal No.48. |
| 4 | Line No. 4 (DN Loop) | --- | --- | DN Starter Signal No. 28 | Up to end of Sand Hump or Up to DN Adv. starter signal No.48. |
| 5 | Line No. 5 (3rd Main/ common loop) | UP Starter Signal No.29. | Up to DS-74 or Up to UP Adv. starter signal No.45. | DN Starter Signal No.24. | Up to DN Adv. starter signal No. 46 of 3RD line. |
| 6. | Line No. 6 (3rd common Loop Line) | UP Starter Signal No.31. | Up to end of ORL or up to UP Adv. starter signal No.45. | DN Starter Signal No.22. | Up to end of ORL or Up to DN Adv. Starter Signal No.46 of 3RD line. |

Before admitting a train on any line, it must be ensured that the track indication for the respective line indicates 'Clear' indication in the VDU. To receive a train, for which line clear is granted, the SM on duty shall nominate a clear line in consultation with the Section Controller on duty. SM shall personally satisfy himself that the nominated line is clear and free from all obstructions by seeing the track indication on VDU or by physical verification of the nominated route in case of failure of Axle counter. He shall suspend all non-isolated shunting and thereafter set the points of the nominated route trough VDU. He shall then verify from the visual indication available in the VDU that points are set to the desired route.

In case of failure of HASSDAC on the concerned route even though the other conditions are satisfied, the operation through VDU by the SM on duty will not permit the concerned Home signal to be taken off. However, reception of train will be possible in such cases with the "Calling-On" signal fixed below Home signal at either end of the station. Calling-On Signal can be taken off even during failure of any track section beyond the Home Signal/starter signal.

Miniature Colour light calling-on signal is provided below the Home signals in terms of GR 3.13(6) (b). A calling-on signal shows no light in the 'ON' position. The calling on signal is taken off for reception of a train when the Home signal above it cannot be taken off due to failure of Axle counter track or any other reason or for admission of a train on blocked line.

**B. TAKING OFF CALLING ON SIGNAL**

To take “OFF” Calling-on signal the train must come to a stop at the foot of the Home signal/Starter signal, occupying the Axle counter track in rear of the signal. When a train occupies the track section a RED light strip will appear on the VDU. The particular route on which train is intended to be received shall be set by tracking the pointer in VDU on to the signal below which the calling on signal is provided. Various options in terms of the total routes over which the signal will lead appear on the menu. Then the SM must drag the pointer and click over the particular Calling-on route amongst the various options displayed in the menu by the left button of the mouse as a result of which the Calling-on signal will blink for 60 seconds in case of calling ON signal below Home signal.

After a lapse of 60 seconds, the Calling-on signal below Home signal will clear. In case of Calling-on signal below starter signal SM on duty should ascertain that the train has stopped at the foot of starter signal then only SM will take OFF calling-on signal below starter signal, without delay the Calling-on will clear i.e., a White light glows at the concerned calling-on signal on the VDU. Every such operation has to be recorded by the on duty SM along with the reasons to do so. The calling-on signal route can be released after complete arrival of the train or by emergency cancellation.

**NOTE:**

SM on duty to ensure that no through signals are given while receiving a train on Calling-on signal.

The provision of taking off of calling-on signal even during failure of any track section beyond Home Signal/Starter Signal is provided.

### 6.3.1 RESPONSIBILITY OF STATION MASTER FOR RESTORATION OF SIGNALS TO ‘ON’: -

If for any reason after taking off signals, it is required to put back the signal and alter the route, in terms of Subsidiary Rules 3.36.02(b) (ii), a time delay of 2 minutes shall be observed before the points can be altered.

## 6.4 SIMULTANEOUS RECEPTION, DESPATCH, CROSSING & PRECEDENCE OF TRAINS:

According to the existing interlocking at this station, the simultaneous reception and despatch of trains are permitted as stipulated below (GR3.47).

| | | |
|---|---|---|
| 1 | While Receiving of an Up train on line No.1 (common loop) set to DS-72 | Reception/despatch of DN train on/from R-3 & R-4 or Despatch of an UP train from Line No.2. or Reception of an UP train on 3rd line R-5 & R-6. or Despatch of a DN train from 3rd line R-5 & R-6. |
| 2 | While receiving an UP train on Line No-2. | Reception/despatch of DN train on/from R-3 & R-4 or Reception of an UP train on 3rd line R-5 & R-6. or Despatch of a DN train from 3rd line R-5 & R-6 or |
| 3 | While receiving a DN train on Line No-3. | Reception/despatch of an UP train on/from R-1 & R-2 or Reception of an UP train on 3rd line on R-5 & R-6 or Despatch of a DN train from 3rd line R-5 & R-6. |
| 4 | While receiving a DN train on Line No-4 set to sand hump. | Reception/despatch of an UP train on/from R-1 & R-2 or Despatch of DN train from Line No.1 & Line No.3 or Reception of an UP train on 3rd line R-5 & R-6 or Despatch of a DN train from 3rd line R-5 & R-6. |
| 5 | While receiving a DN train on Line No-1 (Common loop) set | Despatch of a DN train from R-3, R-4, 3rd line R-5 & R-6 or |

| | | |
|---|---|---|
| | to DS-57 | Reception of an UP train on 3rd line R-5 & R-6 |
| 6 | Reception of UP train on Line No-5 (3rd line) set to DS-74 | Reception/despatch of an UP train on/from R-1 & R-2 or Reception/Despatch of a DN train on/from R-3 & R-4. |
| 7 | Reception of UP train on Line No-6 (3rd line) set to ORL | Reception/despatch of an UP train on/from R-1 & R-2 or Reception/Despatch of a DN train on/from R-3 & R-4 or Despatch of an UP train from R-5 |
| 8 | Reception of DN train on Line No-5 (3rd line) | Reception/despatch of an UP train on/from R-1 & R-2 or Despatch of a DN train on/from R-3 & R-4 |
| 9 | Reception of DN train on Line No-6 (3rd line) set to ORL | Reception/despatch of an UP train on/from R-1 & R-2 or Despatch of a DN train on/from R-3, R-4 & R-5 |

## 6.5 COMPLETE ARRIVAL OF TRAIN: -

(Rule no. GR 4.16 & SR 4.17.01, GR4.17.02, GR 14.10)

i) **STAFF RESPONSIBLE TO VERIFY COMPLETE ARRIVAL: -** SM on duty.

ii) **MODE OF VERIFICATION**: Through AXLE COUNTER.

### 6.5.1 L.V. VERIFICATION THROUGH AXLE COUNTER: -

Entire block section at both sides of the station is monitored by axle counter system and the position of block section whether clear or occupied is indicated in the VDU and Axle counter Reset Box. As soon as a train enters in to the block section, the 'RED' indication appears in the axle counter indication panel. After the whole train clears the block section, 'GREEN' indication appears on the axle counter indication panel. This confirms the complete arrival of train and the SM on duty shall give train out of section report on seeing the section clear (GREEN) indication in the resetting panel.

### 6.5.2 L.V. VERIFICATION WHEN AXLE COUNTER FAILS:-

In case of failure of axle counter, the Station Master on duty shall obtain complete arrival certificate from the Guard of the train in the complete arrival register (T/1410) maintained at the station for stopping train. For through passing train the station master on duty shall satisfy himself about complete arrival of train by verification of the last vehicle indicator vide Subsidiary Rule 4.16.04 that the train is complete.

### 6.5.3 L.V. VERIFICATION WHEN MOTOR TROLLEY FOLLOWING:-

On occasions when motor trolley follows a train, the points shall not be altered until the following motor trolley is admitted on the same line. In the event of motor trolley is delayed in the section the Station Master on duty shall take action in terms of Subsidiary Rule 15.25.03 (b)(vi).

## 6.6 DESPATCH OF TRAINS: -

Despatch of trains are governed by General Rules 3.36, 3.38, 3.42, 5.11,14.08 & 8.01 Subsidiary Rule 3.36.04(b), 3.42.04 and Block Working Manual 2.07(5)(a)(b) and other provisions of General Rules, Subsidiary Rules, Block Working Manual and Station Working Rules of the station.

To despatch a train, the Station master on duty having obtained line clear for that train, shall set the route for the outgoing train correctly and satisfy himself by observing the visual indication on the VDU. He shall suspend all non-isolated shunting and ensure that the Level crossing gates are closed against road traffic and then shall take "OFF" the concerned route starter and Advanced starter signal. The 'OFF' aspect of the

concerned starter and Advanced starter is the authority to proceed into the block section.

The Station Master on duty shall watch the safe passage of the train with its last vehicle indicator. After the train passes the advanced starter complete, he shall send the train entering block section signal to the station in advance.

If a train worked without Brake Van or Guard the instruction laid down in Subsidiary Rules 4.23.02 and 4.25.02 shall be followed.

**6.6.1 PUTTING BACK SIGNALS TO 'ON' IN CASE OF EMERGENCY: -**

If a signal once taken 'Off' for reception/despatch of a train has to be, in an emergency, put back to 'ON', the procedure laid down in Subsidiary Rules 3.36.02 shall be followed. In case of reception of train, route shall not be altered until the train has come to a stand outside Home signal. In case of departure signal before changing route, the SM shall take action as per SR 3.36.02(b) (i).

**6.7 TRAINS RUNNING THROUGH**: -

a) The provision of GR 3.4, 4.17, 4.42 with relevant SRs and SR 3.42.02 (a) (iv) and other relevant provision of BWM shall be observed.
b) The sequence for taking 'OFF' signals for run through trains is governed by SR 3.42.02 (a) (iv).
c) In every case in which trains are permitted to run through on a non isolated line, all shunting shall be stopped and no vehicle unattached to an engine or not properly secured in accordance with rule 5.23 may be kept standing on a connected line which is not isolated from through line vide SR 4.11 (2).
d) The SM on duty is responsible to see that a train passes complete with its last vehicle indicator. If a train passes without last vehicle indicator or its authorized substitute, action shall be taken as per General and Subsidiary Rule. [Ref. GR 4.17, 4.42 and SRs there to.
**e)** The SM is responsible to observe/watch the condition of the vehicles on a train and shall wave green hand signal horizontally as per Subsidiary Rule 4.42.02. (b) until anything wrong is noticed on train. For this purpose the SM on duty shall stand in such a position that a clear view of the passing train is seen by him and that his hand signals can clearly be seen by the Loco Pilot and Guard of the train. He shall depute his points man with hand signal to the other side of the passing train who shall exhibit hand danger signal to draw the attention of the guard/ Loco Pilot of the train in case of observing any unsafe condition/abnormalities of the train. He shall also report to the SM on duty for taking further suitable action in terms of SR 4.42.02(d).

**6.8 WORKING IN CASE OF FAILURE : -**

In case of failure of S&T equipment on duty Station Master shall work in accordance to GR 3.68, 3.69 and 3.70 and SRs thereto.

**6.8.1 PROCEDURE TO BE FOLLOWED INCASE OF FAILURE OF A SIGNAL & INTERLOCKING INSTALLATION: -**

Whenever there is a failure of points, signals, track circuits or any other interlocking gear at the station that includes level crossing gate (s), the SM on duty shall follow the procedure detailed in GR 3.68, 3.72, 3.74 and SR thereto. In case of defective approach signals, the trains will be piloted in vide SR 3.69.02, 3.69.03 & 3.69.05 and 3.69.06. In case of defective departure signals, trains will be piloted out vide GR 3.70 & SR 3.70.01, 3.70.02 and 3.70.03.

6.8.2 **MSDAC:**

In case of failure of MSDAC of any zone, the clearance of the concerned zone should be ensured physically before a train is piloted. Resetting procedure will be adopted as mentioned in Appendix-B. if the axle counter indication does not appear 'Green & continues to show 'RED' condition after resetting, then failure intimation to be given to sectional signal Maintainer /JE/SSE (signal) for rectification.

**6.8.3 DEFECTIVE SIGNALS:**

When signals become defective, the procedure laid down in GR & SR shall be followed. A signal in the OFF position is the final indication that the points are correctly set for the route for which it applies and if it is found impossible to take OFF a signal, the setting of points on the route to which it applies shall be inspected by the Station Master on duty before the signal is declared as defective irrespective of what is indicated by the position of the route, [Refer GR 3.68 to 3.46, 3.51, 3.52 to 3.56, 3.71, 3.80 and 3.81].

In case of disconnection of signal and interlocking for repairs and maintenance, procedure laid down in GR and relevant SRs shall be followed. In the event of signal showing no lights, Station Master on duty shall before giving line clear, initiate action in accordance with the procedure prescribed in GR and the relevant SRs. [Refer GR 3.51, 3.69, 3.49 (4), 3.68 to 3.77, 3.80 & 3.81]

**6.8.4 BLOCK PANEL**

In the event of partial/total failure of Block Panel the concerned Block Panel shall be suspended till its rectification and trains shall work as per GR. [Refer SR 6.02.03, SR 6.02.04 & 6.02.06)& 14.13.

Both UP and DN advanced Starters are electrically interlocked with respective block Panels so that the same cannot be taken off unless the concerned block Panel is in line clear position (TGT). When the block Panel is suspended in 'Line clear' position, the concerned Advanced Starter must also be treated as suspended.

During the failure of Block panel of the section BMCK-MNGD and BMCK-THV, the authority will be T/369(3b) with identification number & Private Number issued from the station in advance written both in figure and words.

In case of failure of Block Panel of the section BMCK-MNGD (3rd line), train shall be worked on PLCT.

**6.8.5 DEFFECTIVE INTERLOCKING:**

In the event of interlocking becoming defective, the points will be treated as defective. The SM on duty on receipt of this information will immediately introduce non-interlocking system of working at the station. Trains will be Piloted In or Out as the case may be. The SM on duty shall be responsible for correct setting, clamping and padlocking of both facing & trailing points for admission of train.

6.8.6 **DEFFECTIVE/DAMAGED POINTS:**

When any point fails to operate normally by the route setting operation through VDU, it is inevitable to operate the points with crank handle. The SM on duty shall personally ensure clamping and padlocking of all facing and trailing points on the route. Crank handles are interlocked with signals and interlocking system. When points become defective, the signals controlling these points shall be considered defective and vice-versa and the procedure for use of crank handle for motor operated points shall be followed as per operating manual para-2.19.

The responsibility of correct setting of points, clamping and padlocking the points for reception and despatch of trains at the station, rests with SM on duty himself.

6.8.7 **INSPECTION OF POINTS BEFORE DECLARING THEM DEFECTIVE**:

However, before declaring a signal is defective, the setting of the point on the route to which it applies shall be inspected by the Station Superintendent/Station Master irrespective of the position of the switches and Points, laid down in GR with relevant SRs shall be followed. [Refer GR 3.68, 3.70 & SR 3.77.01(b)]. Initiate action in accordance with the procedure prescribed in GR and relevant Subsidiary Rules there to. [Refer GR 3.49(4) and 3.68, 3.77]

**6.8.8 ISSUE OF CAUTION ORDER:-**

Whenever in consequence of the line being under repair or for any other reason special precautions are necessary, a caution order detailing the kilometers and speed at which a train shall travel and the reasons for taking such precautions shall be handed over to the driver in terms of GR 4.09 and SR thereto.

**6.9 WORKING OF MOTOR TROLLEY, MATERIAL LORRIES ETC: -**

(a) Motor Trolleys are run in accordance with Subsidiary Rules 15.25.03 to 15.25.07.
(b) Material Trolleys will work in accordance with Subsidiary Rules 15.27.05 to 15.27.08.
(c) Rail Dolly's will work in accordance with Subsidiary Rules 15.27.10.

**The following precautions must be taken:**

i) The section where axle counters are provided in lieu of track circuits, trolleys, motor trolleys, Lorries etc which are not insulated, shall not be allowed to run except on line clear.
ii) Motor trolleys / tower wagons / material Lorries are not likely to actuate the axle counter correctly. When they are to run over the section split by axle counters, the whole section to be treated as one and next train to be started after the last train has arrived complete.
iii) In all other respects, the working of a light Motor trolley shall conform to the rules laid down for motor trolleys while running without block protection and to those laid down for motor trolleys while running under block protection or following another light motor trolley or a motor trolley.

**7.0 BLOCKING OF LINES: -**

Whenever a running line is blocked either by loose vehicles or by stabling train or by a train which is to cross or give precedence to another train, the points at either end should immediately be set against the blocked line except during shunting movement.

'Line Block' is to be activated on VDU by SM on duty following procedures as laid down in Para No. 7.1. A clear remark in 'RED' ink shall be made immediately in the train signal register and a record shall be made in the Station Master's diary also. Stable load register is also to be maintained. The stable load or loose vehicles are to be secured to prevent rolling down of vehicles. [Refer SR 3.36.3(b), GR 5.23.]

**7.1 LINE BLOCK FEATURE IN VDU :-**

Line block feature identical to conventional panel is incorporated in VDU of BMCK station for blocking of a running line which is blocked either by loose vehicles or by stabling of a train or by a train which is to cross or give precedence to another train. For blocking/unblocking of line, SM on duty has to click the mouse near the route button provided on running line and a popup menu Blocking & Unblocking will appear. By

selecting the blocking option the said line is blocked and reception signal pertaining to that line cannot be taken off. For unblocking the line SM on duty has to select the unblocking option from popup menu. Similarly Blocking/Unblocking feature is provided near the advanced starter signals of both end of the station for Blocking/Unblocking the block section. By selecting the blocking option no train can be despatched to the block section.

**7.2 SECURING OF VEHICLES** :-

On non-isolated lines, no load shall be stable without a live engine attached. As far as practicable, loose vehicles shall not be allowed to stand on the running line. However, under unavoidable circumstances, if it is necessary to detach vehicles from a train or to stable a train and leave them standing on running line, SM on duty shall be responsible to secure vehicles/stable loads in accordance with GR 5.23 and SR 5.23.01 to prevent rolling down of vehicles and arrest obstruction & fouling of line.

**NOTE:** Special care shall be taken to secure special type vehicles fitted with roller bearings while standing in siding or on running lines.

**7.3 ALTERING OF POINTS TO A CLEAR LINE WHEN RUNNING LINE IS BLOCKED**:-

a) When a running line is blocked by stable load e.g., wagons, vehicles or by a train which is to cross or give precedence to another train or immediately after arrival of a train at the station etc. the points at either end should immediately be set against the blocked line except when shunting or another movement is required to be performed in that direction on the same line.

b) If all the lines at a station happens to be blocked when line clear has been granted to a train, the points should be set for the line occupied by a stable load or a goods train in that order so that in a case of mishap, the chances of casualties are minimized.

c) In case all the lines are occupied by passenger carrying trains points should be set for a loop line, to negotiate which the speed of the incoming train would be reduced, which in turn would minimize the consequences/casualties. While doing so, points may be set for a loop, occupied by a train if any, whose engine is facing the direction of approach of the incoming train rather than a loop line, occupied by a train whose passenger coach will, in case of collision, receive the impact.

**7.4 LOADING AND UNLOADING OF VEHICLES ON RUNNING LINE**:-

Loading and unloading from vehicles on running line is prohibited unless permitted by Sr.DOM / SBP vide SR 5.19.01.

At stations during loading and unloading of goods is permitted whether full rake or part thereof, the station master shall ensure that no goods are left fouling any line before and after clearance of the rake from the line. The railway servant supervising loading and unloading shall also ensure that consignment does not foul any line vide SR 5.19.01(a).

As the station is on gradients, the rake should be properly secured as detailed in SR 5.23.01.

During the time of loading / unloading, the station master shall ensure isolation of the lines(s) as detailed in SR 3.51.06.

**8.0 SHUNTING: -**

**8.1 GENERAL PRECAUTIONS: -**

The rules laid down in GR 3.46, 3.52 to 3.56, 5.13 to 5.23, 8.05(2) (3), 8.06, 8.09, 8.10, 8.11, 8.12, 8.13, 8.14 and 8.15 with relevant SRs to be observed. All shunt movement shall be supervised by Guard/SS/SM/TPM on duty vide SR 5.13.03 as the case may be. In the event of any non-signaled movement, the SM on duty shall ensure physical verification of the clearance of the crossover points.

The staff supervising shunting shall ensure correct setting by clamping and pad locking of both facing and trailing points.

NOTE:- During attachment and detachment of loco/locos from stock at BMCK station, the procedure laid in the Divisional JPO issued on date: 09.12.2024 shall be followed strictly.

**8.2 SHUNTING IN FACE OF AN APPROACHING TRAIN:**

Shunting in the face of an approach train is strictly prohibited vide GR 8.09 and SR thereto.

**8.3 PROHIBITION OF SHUNTING ANY SPECIAL FEATURES IF ANY:**

i) Hand shunting /Fly shunting/Loose shunting is prohibited at both ends of the yard.
ii) Use of Starter Signals for shunting purpose is prohibited.
iii) SR 4.48.01 is applicable for this station.

**8.4 SHUNTING ON SINGLE LINE:**

a) Within Station section: Governed by GR 8.10.
b) Between last stop signal and opposite first stop signal: Governed by GR 8.12.
c) Beyond opposite first stop signal: unless the line is blocked back, the line outside the first stop signal shall not be obstructed vide GR 8.13.
d) During failure of block instrument: Block back messages shall be exchanged between station master at either end of such section which is intended to obstruct supported by private number. Both the station masters shall fix line block labels on block instruments and shall continue shunting.

**8.5 SHUNTING ON DOUBLE LINE:**

i) When the line clear has been given no shunting shall be permitted in the block section in rear Vide GR 8.06 (1).
ii) Shunting or obstruction for any other purpose shall not be permitted in the block section in rear unless it is clear and is blocked back Vide GR 8.06(2) and BWM 6.15.
iii) Shunting or obstruction for any other purpose shall not be permitted in the block section in advance unless it is clear and is blocked forward Vide GR 8.06(3) and BWM 6.15.

**8.6 SHUNTING IN THE SIDING TAKING OFF FROM THE STATION YARD/GOODS YARD:**

Shunt signals are provided for shunting. During non-signaling movement T/806 is to be issued and clamping and padlocking of the siding points (both facing and trailing) is to be ensued.

**9.0 ABNORMAL CONDITIONS: -**

**a) THE RULES TO BE OBSERVED IN THE EVENT OF ABNORMAL CONDITION: -**

**i) DURING PARTIAL INTERUPTION/FAILURE OF ELECTRICAL COMMUNICATION INSTRUMENT: -**

In the event of suspension of Block Panel and during partial failure of other available means of communication, the procedures detailed below shall be followed for working of trains in different situations. (Refer SR 6.02.06)

**ii) THE AUTHORITY TO PROCEED IN THE OCCUPIED BLOCK SECTION IN CASE OF OBSTRUCTION OF LINE OR ACCIDEDNT**: -

In case, it is necessary to allow a train into an obstructed block section due to engine failure, obstruction or accident, a block ticket shall be issued in terms of SR 6.02.05. Absolute Block System on the affected block section shall be suspended and concurrence of the SM at other end shall be obtained and recorded in caution order register and train signal register.

On the block ticket (T/A 602) it shall be mentioned in detail the place of obstruction i.e. OHE Km., B/Van Km., whether the train is to return or to wait at the place of obstruction for the arrival of another following train(s) or to proceed to next station.

A caution order shall be issued restricting the speed to 15 Kmph in day light hours when the visibility is good and 10 KMPH at night or whenever clear view of 800 Mtrs. is not available. On arrival at the station the block ticket shall be collected with necessary endorsement from Driver/Guard and cancelled and pasted to its record foil or shall be sent to the issuing station for cancellation. In case of accident/engineering block assurance from SE/P.WAY concerned shall be obtained that the line is safe for movement of trains before resumption of normal working. When the obstruction is removed and assurance in writing is obtained from SE/P.WAY concerned or Guard/Loco Pilot the SM on duty may resume normal working after exchanging proper messages supported by Private Number.

Rules and Regulations for working of trains on an obstructed line in case of obstruction or accident on the authority of Block Ticket (T/A-602) when communications are available shall be followed in accordance with the provisions [Refer SR 6.02.05]

**iii) TRAINS DELAYED IN BLOCK SECTION**: -

If a train carrying passenger does not arrive within 10 minutes or if a goods train does not arrive within 20 minutes after allowing for its normal running time from the station in rear, the SM at the station in advance shall immediately advise the station in rear and the control this fact. There after SMs at either end of the double line section shall immediately stop all trains proceeding in to the block section on adjacent line in either direction and warn the Loco pilots and Guards of such trains by issue of suitable Caution Orders. [Refer GR 6.04 & SRs thereto]

**iv) FAILURE/PASSING OF INTEMEDIATE BLOCK STOP SIGNAL AT ON: -**

In the event of suspension of Block Panel/Lock and Block Instrument or Failure/ Suspension of Intermediate Block Home or failure of track circuits beyond the Intermediate Block Signal on UP or DN line or failure of Axle counter, the intermediate Block Post concerned shall be deemed to be closed and section between the stations on either side of the Intermediate Block Post concerned shall be treated as one block section. Refer to General Rule No. 14.14, 3.70 and 3.75. The authority to pass the Advanced Starter and Intermediate Block Stop Signal concerned at 'ON' shall be issued by the SM immediately in rear of such signal.

**v) FAILURE OF LV AXLE COUNTER: -**

Detail operation is given in Appendix 'B' of SWR.

**vi) FAILURE OF MTRC - NIL**

**b) PROCEDURE FOR EMERGENCY OPERATION OF POINTS BY CRANK HANDLE:**

Details of the operation are given in Appendix 'B' of SWR.

c) **CERTIFICATION OF CLEARANCE OF TRACK BEFORE CALLING-ON SIGNAL IS OPERATED:**

To take 'OFF' a calling on signal during failure of Axle counter track on the route, the clearance of the track over which the train would pass must be physically checked by the SM on duty. After satisfying himself SM on duty shall initiate the calling on signal operation. The procedure shall be strictly followed.

d) **REPORTING FAILURE OF POINTS, TRACK CIRCUIT/AXLE COUNTER AND INTERLOCKING: -**

In case of failure of any interlocking gear at the station, the failure report should be communicated by the SM on duty to the sectional Maintainer, the JE/SSE (SIG) of the Section and others through a memo as per SR 3.68.04 and document all such transactions.

**9.1 TOTAL FAILURE OF COMMUNICATION BETWEEN STATIONS ON DOUBLE LINE SECTION:**

In the event of total failure of communications between BMCK-MNGD and BMCK-THV i.e. when line clear cannot be obtained by any one of the following means stated in order of preference viz.

(a) Block Instruments or Axle counters,
(b) Telephone attached to the Block Instruments,
(c) Station to station fixed telephones(Hot line),

(d) Fixed telephones such as Railway auto phones, BSNL phones,
(e) Control telephone, and
(f) VHF set.

The trains shall be worked in terms of GR.6.02.03, which is summarized in brief as follows:

(i) Each train before being allowed to enter into the Block Section should be stopped and the Guard and Loco Pilot of the train apprised of the situation.

(ii) The SM will hand over an authority ie., T/C 602 for working of train during total interruption of communication to the Loco Pilot of each train which shall include-

a) Authority to proceed without 'Line Clear'.
b) Authority to pass the Last Stop Signal at its "ON" position.
c) A caution order restricting the speed to 25KMPH by day when view ahead is clear and 10KMPH by night or when view ahead is not clear.

(iii) No train shall be allowed to enter the Block Section until there is a clear interval of 30minutes between the train about to leave and the train, which has immediately proceeded.

(iv) Fixed signals except the last stop signal may be taken "OFF" for the despatch of the train and for the reception of the train at the next block station, reception signals may be taken off only after the train has been brought to a stand outside it.

(v) On arrival at the next block station the Loco Pilot shall hand over the authority to proceed without line clear to the SM on duty who will preserve the same for further inspection.

(vi) Before resuming normal working when any means of communication is established, SM of either end must satisfy that there is no train in the block section. [Refer SR 6.02.03].

## 9.2 TEMPORARY SINGLE LINE WORKING ON DOUBLE LINE SECTION:

During temporary single line working, when one line is clear and the other line is obstructed between BMCK-MNGD and BMCK-THV, the trains shall be worked as per the procedure, which is summarized as follows:

(a) Before introducing single line working the SM on duty must satisfy that the line on which single line working will be introduced is clear and free from all obstructions.
(b) The Block Panel or DLBI will be suspended as the case may be. The Commutator of Lock & Block Instrument will be kept on "Train on line position".
(c) SM proposing single line working must issue a message with

(i) The cause of introduction of single line working,
(ii) Line on which the single line will be introduced,
(iii) Source of information about the clearance of the line on which single line will be introduced,
(iv) Place of obstruction,
(v) Restriction of speed, If any,
(vi) Assurance about keeping the last stop signal at 'ON' position if the train runs on right line and in case of wrong line all signals are to be kept at 'ON' position etc under the exchange of Private Number.

(d) SM on duty at the other end of the block section will acknowledge the message and confirm the same by a Private Number.

(e) After obtaining line clear for the train from the advance station the Loco Pilot must be given as-.

(i) Authority for Temporary Single Line (TSL) working on double line (T-D/602) indicating there in

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- Caution order
- The line on which single line working is introduced.
- The chainage kilometer of obstruction.
- Any other speed restriction, if any existing.
- Endorsement to inform all Gang man and Gateman about the single line working (for the first train only).
- The speed of the first train to be restricted to 25 KMPH subject to other speed restriction.
- Authority to pass Signal in “ON” position

(ii) The approach stop signals at the station in advance may be taken “OFF”. In case a train proceeding on wrong line, the train shall be piloted out and at the receiving station, the train shall be piloted ‘IN’, on the authority of T/510.

On being ensured that the obstructed line is clear and free from all obstructions, the SM will resume normal working after exchanging message with the SM of the other end supported by exchange of private number in consultation with the Section Controller on duty when there is no train in the block section.

A goods train or an engine may be allowed on wrong line by blocking back the section without introducing single line working. [Refer SR. 6.02.05(g)(i)]

Whenever total interruption of all communication occurs during single line working on double line, the procedure detailed in GR should be followed. [Refer SR 6.02.02].

**9.2.1 TOTAL FAILURE OF COMMUNICATION BETWEEN BMCK-MNGD STATIONS ON SINGLE LINE SECTION (S.R 6.02.04):**

In the event of total failure of communications between, BMCK-MNGD on 3rd line on single line i.e. when line clear cannot be obtained by any one of the following means stated in order of preference viz.

a) Block Panels, Track Circuits or Axle counters,
b) Telephone attached to the Block Instruments,
c) Station to station fixed telephones wherever available,
d) Fixed telephones such as Railway auto phones & BSNL phones,
e) Control telephone, and
f) VHF sets,

Action shall be taken as per SR 6.02.04. The train will be stopped and the Loco Pilot and Guard of the train shall be informed about the fact.

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**DSTE /SBP**

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**DOM(G)/SBP**

Before despatching the Light engine/main engine/motor trolley/Tower wagon/Trolley/ Cycle trolley/Moped trolley/ Diesel car/rail motor car/EMU rake, the SM on duty shall hand over an Authority i.e. T/B 602 for opening of communication during total failure interruption of communication on Single Line Section to the driver/motorman/Guard/ SM who is being sent to open communication, which includes.

1) An authority to proceed without “Line Clear” in the prescribed form.
2) A Caution Order restricting to speed of the train to 15Kmph by day when the view ahead is clear and 10 Kmph during night or when view ahead is obstructed in addition to other speed restrictions in force (T/B409).
3) Authority to pass the Last Stop Signal at ‘ON’ position.
4) A “Line Clear” enquiry message (T/E602) asking “Line Clear” for the awaiting Train (T/F602).
5) A conditional “Line Clear” message for the light engine to return with or without a train attached, supported by a Private Number.

On arrival of the engine at the next station, the conditional “Line Clear” message and enquiry message shall be collected by the SM on duty who shall prepare conditional “Line Clear” ticket (T/G602 or T/H602) for engine to return either light or a train attached to it and conditional “Line Clear” reply message for the enquiry message, giving “Line Clear” for the train waiting at the other end shall be handed over to the Driver of the light engine. On return trip, the Loco Pilot will come on booked speed subject to any other speed restriction in force.

As soon as any one of the means of communication has been restored the conditional “Line Clear” working of train shall be cancelled when there is no train in the affected block section and messages shall be exchanged supported by Private Number. The section controller shall be informed.

## 9.3 DESPATCH OF TRAIN UNDER AUTHORITY TO PROCEED WITHOUT LINE CLEAR OR TO ASSIST THE CRIPPLED TRAIN: -

Rules and Regulations for working of trains on an obstructed line in case of obstruction or accident on the authority of Block Ticket (T/A-602) when communications are available shall be followed in accordance with the provisions which is summarized as follows [Refer SR 6.02.05]

After sending a train on block ticket, a following train shall not be despatched in the same direction unless:

a) SM will suspend the Absolute Block System of Working and both SMs concerned should arrange for running of trains on the authority of Block Ticket.

b) SM at the despatching end will hand over to the driver the block Ticket i.e T/A 602 as the authority which shall include:

   i) Caution Order: Existing Speed Restriction/s shall be indicated in the Caution Order portion. The Speed Restriction to 15 KMPH during clear visibility and 10 KMPH when visibility is obstructed shall be clearly indicated.
   ii) An authority to pass the Stop Signal at “ON” position.

c) The previous Block Ticket is collected and cancelled or

d) Necessary endorsement is given on the previous block ticket with the advise to wait at the site for a next train to follow or

e) The previous train has met with an accident or has been disabled or

f) The Block ticket has been cancelled from the Loco Pilot of the previous train by the official –in-charge at the site and kept in the personal custody & shall be kept until the arrival of the next train and such assurance is given over the telephone installed at the site quoting the serial number of the Block Ticket so collected.

g) Before resumption of normal working a message between the SMs of the concerned stations shall be exchanged with private number.[Ref SR 6.02.05(d)(vi)]

The Block Ticket so issued must be collected by SM of either end with a certificate about the complete arrival of the train with its time and the section is clear of all obstructions from Loco Pilot/Guard of the train and cancelled.

**10 VISIBILITY TEST OBJECT**: -

Common Loop Line No.1 Starter Signals at both ends are nominated as V.T.O to enable the SM on duty to take action in terms of GR 3.61 and SRs there to. The light of these signals shall be verified from the V.T.O Location earmarked for this purpose on platform No.1.

**11 ESSENTIAL EQUIPMENTS AT THE STATION**: -

This is mentioned in the Appendix 'E' of the SWR. Essential equipment shall be kept ready on hand in good condition with necessary relief stock.

**12 FOG SIGNAL MEN NOMINATED TO BE CALLED IN CASE OF FOG: -**

The station has been provided with double Distant signals which give adequate pre warning to the loco Pilot. Hence, placing of detonators in case of fog shall be dispensed with vide SR 3.61.01. However, Fog Signal Register shall be maintained as per GR 3.61 and Subsidiary Rules thereto. In charge of the station shall ensure that the information maintained in the register is kept up to date and is accurate in all respects. Transportation inspectors shall check the registers and also the stock of detonators on hand each time they visit the station and initial with date as an indication having done so.

**CERTIFICATE: -**

NOTHING IN THESE RULES SHALL BE READ AS CANCELLING, AMENDING AND MODIFYING ANY OF THE GENERAL RULES, SUBSIDIARY RULES, BLOCK WORKING MANUAL AND OPERATING MANUAL. THESE RULES HENCEFORTH CANCELL ALL PREVIOUS STATION WORKING RULES OF BISSAM CUTTACK STATION.

**APPENDICES**

| | |
|---|---|
| APPENDIX 'A' -- | WORKING OF L.C. GATES. |
| APPENDIX 'B' -- | SYSTEM OF SIGNALLING AND INTERLOCKING AND COMMUNICATION ARRANGEMENTS AT THE STATION. |
| APPENDIX 'C' -- | ANTI COLLOISION DEVICE (RAKSHA KAVACH). |
| APPENDIX 'D' -- | DUTIES OF TRAIN PASSING STAFF AND STAFF IN EACH SHIFT. |
| APPENDIX 'E' -- | ESSENTIAL EQUIPMENTS OF STATION. |
| APPENDIX 'F' -- | RULES FOR WORKING OF DK STATIONS, PASSENGER HALTS, IBH, IBS AND OUTLYING SIDINGS. |

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**DOM(G)/SBP**

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| APPENDIX 'G' | -- | WORKING OF TRAINS IN ELECTRIFIED SECTIONS. |

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## APPENDIX – 'A'

## GATE WORKING INSTRUCTIONS OF "C" CLASS ENGG. NON-INTERLOCKED LEVEL CROSSING GATE AT KM 293/1-3(UP), 293/2-4(DN) (No.RV-230) BETWEEN MUNIGUDA – BISSAM CUTTACK STATIONS.

1.1 **GENERAL INSTRUCTIONS**: -

**1.1.1 DESCRIPTION OF THE LEVEL CROSSING GATE**:-

| | | |
|---|---|---|
| 1. | Number of Level Crossing Gate: - | RV-230. |
| 2. | Engineering or Traffic Gate: - | Engineering. |
| 3. | Under control of Station Master/PWI:- | PWI. |
| 4. | Location KM | 293/1-3(UP), 293/2-4(DN) |
| 5. | At. Station | ------ |
| 6. | In between stations: | BMCK-MNGD |
| 7. | BG/MG/NG | BG. |
| 8. | Single line/Double line/Multiple line | Multiple Line |
| 9. | Normal Position | Closed to road traffic |
| 10. | Interlocked/Non Interlocked | Non-interlocked |
| 11. | Means of interlocking | NIL |
| 12. | Provision of Gate signal at Kms | i) Up line NIL<br>ii) Dn line NIL |
| 13. | Signalling arrangement | NIL. |
| 14. | Means of Communication – Telephone/Bell etc | Voice Logger Telephone Communication is provided from Gate lodge with SM / BMCK. |
| 15. | Width of level crossing Gate | 7.5 Meters |
| 16. | Type of road. (NH/SH/Others) | Others |
| 17. | Name of Road: | Village Road |
| 18. | Metal/Non Metal | Metal |
| 19. | Approach Road: | Metal |
| 20. | Width of the road: | 5.5 m |
| 21. | Angle of road crossing (In case of the skew Gates) | Nil. |
| 22. | Road gradient (If any) | i) North/East side:-1 in 30<br>ii) South/West side:- 1 in 30 |
| 23. | Road alignment (Straight/Curve): - | i) North/East side:- Curve<br>ii) South/West side:- Curve |
| 24. | Provision of height gauges | Provided |
| 25. | Type of Barriers | Winch Operated Lifting barriers |
| 26. | Length of check rails | 9.5 Meter |
| 27. | Road surface in between Level X-ings Gates | CC Blocks |
| 28. | Length of speed breakers: - | 5.5 Meters |
| 29. | Road signs: | Provided |
| 30. | Speed breaker indication board | Available |
| 31. | TVU: | **15067 on 02/2022** |
| 32. | Census next due on | 02/2025 |

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DSTE/SBP

K. NAVEEN RAJU
DEN/S/SBP

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DOM(G)/SBP

| | | |
|---|---|---|
| 33. | Demarcation for placement of Detonators | Provided. |
| 34. | No. of Gateman working | 02 (12 hours shift) |
| 35. | Nearest Railway Medical Assistance | Titlagarh |
| 36. | Nearest Private Medical Assistance available (if any) | Muniguda |
| 37. | List of equipment available Yes/No | Yes. |

1.2. **EQUIPMENT**:

| | **ITEMS** | **QUANTITY/NUMBERS** |
|---|---|---|
| 1. | Tri Colour Torch | 3(5 on Quadruple/Line or twin single line) |
| 2. | Hand signal Flag Green | 1 mounted on sticks |
| 3. | Hand Signal Flag Red. | 3 (6 on Quadruple/line or Twin single line & 7 in case Hexaple section mounted on sticks) |
| 4. | Banner Flag Red | 3 (5 on Quadruple/Line or twin single line) |
| 5. | Posts for exhibiting red banner flag | 2 (4 on Q/Twin single line and 5 on Hexaple section |
| 6. | Spare chains with padlocks | 2 with stop mark |
| 7. | Detonators | 10 in tin case |
| 8. | Gate Lamps | 2 |
| 9. | Tommy Bar | 1 |
| 10. | Motor Pan | 1 |
| 11. | Spade/Fowrah | 1 |
| 12. | Rammer | 1 (in case of asphalted road this may not be provided) |
| 13. | Pick Axe | 1 (in case of asphalted road this may not be provided) |
| 14. | Tin case for flags | 1 |
| 15. | Can for oil | 1 |
| 16. | Water pot/Bucket | 1 |
| 17. | Canister for Muster Roll | 1 |
| 18. | Set of spare spectacles of Gateman wearing glasses. | 1 |
| 19. | Board demarcating protection of level crossing Gate diagram in case of obstruction on Gate . | 1 |
| 20. | Basket | 1 |
| 21. | Whistle | 1 |
| 22. | Wall clock | 1 |
| 23. | Small size chains with padlocks to be used in case of failure of boom lock. | 2 |

1.3 **The Gateman shall be provided with following registers**: -

i) Gate working instructions in Hindi / English.
ii) Gate working instructions in local vernacular language.
iii) Gateman Rule Book in Local vernacular language.
iv) List for tools and books.
v) Duty Roster.
vi) Certificate for working as Gateman.

vii) Bio–Data particulars of Gateman, including date of passing vision test, initial/refresher course, safety camp etc.
viii) Accident Register.
ix) Records of last census of road traffic at level crossing Gate.
x) Public complaint Book.
xi) Inspection Book.

1.4 **DUTIES OF GATEMAN**:

1. **ALERTNESS:**
The gateman on duty shall be alert. He should be prepared to take immediate action, when danger is apprehended. Keys of the gate shall be in his personal custody.

2. **POSITION OF GATE KEEPER DURING PASSAGE OF TRAINS**:
During passage of trains, gateman will stand in the manner indicated below:

i) Gateman will stand attentively in front of the gate – lodge facing the approaching train.
ii) In daytime, gateman shall hold red and green flags furled up on separate sticks in right and left hands respectively.
iii) In nighttime, gateman shall hold lighted hand signal lamp with white light facing the track.
iv) He shall keep the whistle slung around his neck from a cord.

3. **ROUTINE DUTIES OF GATEMAN**:

i) Gateman shall ensure that red banner flag by day and red light by night is placed across the track whenever the gate is kept in open condition for passage of road vehicles.
ii) Gateman shall ensure that all gate lights and hand signal lights are lighted and kept burning continuously from sunset to sunrise.
iii) Gateman shall perform his duties strictly according to the duty roster and shall not leave the gate unless his reliever arrives and takes over charge from him. However, if it is necessary to leave the gate in an emergency, he must close and lock the gate against road traffic, before leaving the gate.
iv) Except where otherwise prescribed under special instructions, he shall observe all passing trains and be prepared to take such action as may be necessary to ensure safety of trains.
v) Gateman shall watch all passing trains and keep sharp look out for any unusual like hot axle, hanging chains, hanging battery, any vehicle/wagons /trains/battery/box on fire, shifted load, falling material like brake blocks, brake beams, safety bracket, vacuum cylinder or any other situation endangering safe running of trains.
vi) If lifting barriers get damaged or becomes out of order, the gateman shall use the spare chain with disc and padlocks for securing the gate against road traffic.
vii) Gateman shall report to the nearest Station Master, Gangmate or Permanent Way Inspector any defect in his gate or apparatus pertaining to it, as soon as possible.
viii) Gateman shall wear badge and prescribed uniform while on duty at level crossing gate.

ix) Gateman shall ensure that he is having competency certificate in his possession while on duty.
x) Gateman shall work the gate as per gate working instructions and remain well conversant with these instructions.
xi) Gateman shall ensure that equipment supplied at the gate is in good order and ready for immediate use.
xii) Gateman shall see that the channel for the flange of the wheel is kept clear.
xiii) Gateman must keep the road surface well watered and rammed in case of unmetalled roads.
xiv) Gateman must be vigilant to see that inconvenience to road users due to closure of gates should be to the minimum possible extent.
xv) Gateman shall prevent trespassing by persons or cattle to the maximum extent.

**4. <u>ACTION IN CASE OF UNUSUAL OCCURRENCE OF TRAIN</u>.**

In case gateman observes anything unusual with a passing train, he shall take following action:

i) He shall take prompt action to warn the Loco pilot/guard of the passing train by showing red flag by day and red light by night.
ii) He shall simultaneously try to draw the attention of the Loco pilot/guard by whistling continuously, shouting, gesticulating, and throwing ballast on the brake van or by any other means.
iii) If Loco pilot/guard fails to take notice, gateman shall immediately inform the SM/ BMCK, to take appropriate action, under exchange of private number.
iv) In case of train parting, gateman shall not show stop hand signal but shall show prescribed signal for train parting.
v) He shall endeavor to attract the attention of the Loco pilot/Guard by whistling continuously, shouting, gesticulating, and by raising both hands vertically above, quickly parting them and bringing them together in repeated Up and Down motion as high and as low as possible.
vi) In case the train does not stop, gateman shall immediately inform the SM/ BMCK, to take appropriate action, under exchange of private number.

**5. <u>ACTION IN EMERGENCY AT THE LEVEL CROSSING</u>:**

i) In case of an obstruction at the level crossing gate, he shall place banner flag/red light lamps on the stave on track at 5 m. away from the edge of the road at Level Crossing.
ii) Thereafter, if he is unable to remove the obstruction, gateman shall immediately advise the SM/ BMCK on duty, regarding the defects/obstructions at the gate, under exchange of private number.
iii) If there is no response from the SM/ BMCK after three attempts, he shall first protect the gate and then inform on phone.

**<u>Electrified Section:</u>**

(i) On noticing that, the whole or part of the OHE or a feeder or a cable falling down, the gate keeper shall ensure that, as far as possible, human beings, animals or vehicles etc are kept away in order to avoid any contact with the live equipment.

(ii) As soon as it is noticed that, Pantograph of an electric rolling stock getting damaged and/or entanglement of the same with the OHE, he shall make every possible effort to stop the train and immediately inform SM on duty.

(iii) Any damage to the track or structures of the OHE comes to the notice of on duty GK, he shall immediately inform SM on duty and take all necessary measure for protection of the line as mentioned in A&B.

**The gateman shall protect the line as under: -**

**A) <u>ON DOUBLE LINE SECTION</u>**: -

i) If both lines are obstructed the gateman shall plant a red banner flag by day and a red light by night 5 meters away on posts duly provided for the purpose. He shall first protect the direction from which a train is expected to arrive first.

ii) Then he will similarly plant the other red banner flag by day and red light by night towards the other direction 5 meters away from the site of obstruction.

iii) Gateman shall then proceed to protect the gate along with detonators and red flag by day and red hand signal lamp by night.

iv) Gateman shall proceed exhibiting red flag by day and red hand signal lamp by night towards the direction, which a train is expected to arrive first, to a point 600 meters and place one detonator on the line. Thereafter he shall proceed to a distance 1200 meters from the level crossing gate and place 3 detonators on the track in 10 meters apart. Having thus protected the line he shall return to the level crossing gate picking up the intermediate detonator on his way back, which was placed at boom.

v) Thereafter, he shall proceed towards the other direction, showing red hand signal, similarly place detonators as described in (iv) above and return to the site of obstruction, picking up the intermediate detonator on his way back.

vi) Having returned to the gate, he must then take steps to remove the obstruction and warn the Loco pilot of the approaching train.

vii) In case the gateman observes or hears a train approaching when he is still on his way to protect and before he reaches the stipulated distance to place detonators, he shall place detonators on the line at a distance as far away as he can go.

viii) Thereafter, he shall stop the approaching train by waving his red flag by day, red hand signal lamp by night repeatedly.

**B) ON SINGLE LINE SECTION:**

i) Gateman shall plant a Red Banner flag by day and a red light by night 5 meters away on posts duly provided for the purpose. He shall first protect the direction from which a train is expected to arrive first.

ii) He will similarly plant the other red banner flag by day and red light by night towards the other direction 5 meters away from the site of obstruction.

iii) Gateman shall then proceed to protect the gate along with detonators and red flag by day and red hand signal lamp by night.

iv) Gateman shall proceed exhibiting red flag by day and red hand signal lamp by night towards the direction from which a train is expected to arrive first, to a point 600 meters on BG and place one detonator on the Line. Thereafter he shall proceed to a

distance 1200 on BG from the level crossing gate and place 3 detonators on the track in 10 meters apart. Having thus protected the line he shall return to the level crossing gate picking up the intermediate detonator on his way back.

v) Thereafter, he shall proceed towards the other direction, showing red hand signal, similarly place detonators as described in para (iv) above and return to the site of obstruction, picking up the intermediate detonator on his way back.

vi) Having returned to the gate, he must then take steps to remove the obstruction and warn the Loco Pilot of the approaching train.

vii) In case the gateman observes or hears a train approaching when he is still on his way to protect and before he reaches the stipulated distance to place detonators, he shall place detonators on the line at a distance as far away as he can go.

viii) Thereafter, he shall warn the Loco pilot and stop the approaching train by waving his red flag by day red hand signal lamp by night repeatedly.

**C) PROTECTION ON MULTIPLE LINE SECTION:**

i) If all the lines are obstructed the gateman shall plant a red banner flag by day and a red light by night 5 meters away (in the direction from which train comes in UP & DN lines and in both directions for 3rd line) on posts duly provided for the purpose. He shall first protect the line on which a train is expected to arrive first.

ii) He will similarly plant the other red banner flag(s) by day and red lamp (s) by night on the other line (s) 5 meters away from the obstruction.

iii) Gateman shall then proceed to protect the gate along with detonators and red flag by day and red hand signal lamp by night (in the direction(s) described in (i) above.

iv) Gateman shall proceed exhibiting red flag by day and red hand signal lamp by night on the line and direction on which a train is expected to arrive first, to a point 600M on BG and place one detonator on the line. Thereafter he shall proceed to a distance of 1200 M on BG from the level crossing gate and place 3 detonators on the track 10 M apart. Having thus protected the line he shall return to the level crossing gate picking up the intermediate detonator on his way back.

v) Thereafter, he shall proceed on the other line(s) and direction(s) described para (i) above, showing red hand signal, similarly place detonators as described in para(iv) above and return to the site of obstruction picking up the intermediate detonator on his way back.

vi) Having return to the gate, he must then take steps to remove obstruction and warn the Loco Pilot of approaching train.

vii) In case the gateman observes or hears a train approaching when he is still on his way to protect and before he reaches the stipulated distance to place detonators, he shall place detonators on the line as far away as he can go.

viii) Thereafter, he shall warn the Loco pilot and stop the approaching train by waving the red flag by day/red hand signal lamp by night repeatedly.

**D) OTHER ACTIONS TO BE TAKEN BY GATEMAN**:

i) At night Gateman shall light two hand signal lamps and take action to exhibit red light and protect the lines as described in sub paras (a) and (b) above.

ii) If the gate is broken by a road vehicle, which is fouling the track, or if lifting barriers or any other part of the gate foul the track, or if there is any other obstruction at the gate, the gateman shall take immediate action.

iii) He shall note down the particulars of the road vehicle, vehicle number, name of the Driver, owner and relay these details to the SM/ BMCK and Permanent Way Inspector regarding the particulars and obstructions at the level crossing gate, through messenger or other means available.

1.5 **ENGINEERING ITEMS:**

i) **Visibility :-**

| Direction | Side | Visibility Distance |
|---|---|---|
| UP | Right | 950 m. |
| | Left | 1000 m. |
| DN | Right | 480 m |
| | Left | 350 m |
| 3RD LINE | Right | 480 m |
| | Left | 350 m |

ii) Speed Breaker: - Speed Breakers of approved design are provided on either side of this Level Crossing gate.

iii) Periodical Census of traffic has been taken and the latest TVU is **15067on 02/2022**.

1.6 **SPECIAL INSTRUCTIONS**:

1. **MODE OF OPERATION**:

This is a Non-interlocked 'C' Class Engineering L.C. Gate situated at Km 293/1-3(UP), 293/2-4(DN) between MNGD-BMCK stations. This gate is provided with winch operated coupled lifting barriers. The gateman closes and opens the lifting barriers of gate manually by operating the winch. Telephone connection is provided between the L C. gate lodge and SM's office at BMCK station. The level crossing gate is normally closed to road traffic. The SM/ BMCK shall not permit any train to enter the block section, unless he is assured of the closure and locking of the gate by the gateman supported by exchange of private number. When the gateman desires to open the gate for passage of road traffic he should ensure that no PN has been exchanged with the SM/ BMCK for the passage of train or the whole of the train with last vehicle indicator has passed over the level crossing gate for which the gateman has exchanged private number with the SM/ BMCK. Before opening the gate for road traffic, he shall display banner flag/danger signal at either side of the track at a distance of 5 meters away from the gate.

2. **EXCHANGE OF PRIVATE NUMBERS**.

(i) The normal position of level crossing gate being "Closed to Road Traffic" it should always be in closed condition against road traffic, except when, it is opened for passage of road traffic over the level crossing, subject to conditions prescribed below.

(ii) The SM/ BMCK before permitting each train to enter into the block section, shall ask Gateman on the telephone by giving a Private Number whether, gate is closed against road traffic for the passage of train. The Gateman only after ensuring that the gate is actually closed and locked against road traffic shall give a Private Number to the SM/ BMCK in assurance of gate being closed and locked against road traffic.

(iii) The SM/ BMCK shall not permit any train to enter the block section, unless he is assured of the closure and locking of the gate by the gateman supported by exchange of private number.

(iv) When the gateman desires to open the gate for passage of road traffic he should ensure that:

a) He has not exchanged any private number with the SM/ BMCK as per (ii) above.

b) If he has exchanged private number with the SM/ BMCK, the whole of the train with last vehicle indicator has passed over the level crossing gate and SM/ BMCK has not exchanged private number with him for any other movement immediately in rear of that train or on the adjacent line. Before opening the gate for road traffic, he shall display banner flag/danger signal at either side of the track at a distance of 5 meters away from the gate. Then he shall open the gate for passing the road traffic, keeping a red flag / red hand signal lamp ready in his hand to stop approaching train if any.

(v) In case the Gateman is not responding on the telephone or in case the telephone becomes defective or private number is not received from the Gateman, the SM/ BMCK shall adhere to the procedure prescribed in SR 16.03.04.

(vi) In the event of failure of telephone, if the gate is required to be opened for the passage of road traffic, the gateman shall look out in both directions before opening the gate to ensure that no train is approaching from either end. He shall then plant a banner flag during day and a hand signal lamp with the red light during night, 5 meters away from the gate on the track on either side. He will thereafter, open the gate for passing the road traffic keeping a red flag / red hand signal lamp ready in his hand to stop approaching train if any.

3. **FAILURE OF TELEPHONIC COMMUNICATION**:

When Telephonic Communication fails or SM/ BMCK does not get any response from the Gateman despite 2 or 3 attempts, the following procedure shall be adopted:

a) SM/ BMCK shall serve a caution order to the Loco pilot and the Guard of every train proceeding into the affected section giving the number and kilometreage of the level crossing and directing the loco pilot:-

(i) To whistle frequently to attract the attention of the gateman,

(ii) To proceed cautiously, and stop 30M short of the level crossing and be guided by hand signal.

b) (i) The Loco Pilot after stopping, if the gateman is available and apparently in a fit condition to continue his duty and the gates are closed, shall arrange to advise the SM/ BMCK as the case may be of the fact using the telephone provided at the gate. The SM/ BMCK on receipt of such an advice from the Loco Pilot shall discontinue issue of caution order to the following trains provided the acknowledgement of the gateman is available over the telephone.

(ii) In the above circumstance, the Loco Pilot should not stop his train at the next station to advise the Station Master.

c) If the loco Pilot does not find the gateman at the level crossing or if the gateman is apparently unfit for duty and the gates are not closed, he shall depute his Assistant, the Loco Pilot shall seek assistance of the Assistant Guard or Guard of the train. The same should be informed to the SM/ BMCK on gate telephone.

d) The Loco Pilot, after being hand signaled, shall pass the level crossing and stop clear of it by at least 2 bogie lengths to pick up the Assistant or Assistant Guard / Guard, as the case may be. The Railway servant deputed for closing the gate shall reopen it for road traffic after the passage of the last vehicle of the train.

e) If, however, the telephone is out of order or the gateman is not available or is apparently unfit to continue his duty and intimation of the fact could not be given to the SM/ BMCK from the gate, the Loco Pilot shall stop his train at the next station (even if it is through passing station) and give a memo to the Station Master/ MNGD indicating the condition of the gateman, gate and telephone.

f) The SM/ MNGD on receipt of the Loco Pilot's report regarding absence or unfitness of the gateman, shall advise the station Master/ BMCK, the Notice Station, the Section Controller, JE/SE/SSE (P.Way) and AEN concerned and the Gangmate of the nearest gang for immediate posting of a gateman. He shall also inform the maintenance staff to attend and repair the telephone, if required. Issue of caution order should continue till normal working condition is restored.

g) Before giving line clear to a train, the SM/ MNGD shall advise the Station Master/BMCK of the facts by message supported by a Private Number, and obtain his acknowledgement with a Private Number. The latter shall issue a caution order to the Loco Pilot as detailed in Para (a).

h) Necessary entries shall be made in the Caution Order Register, Station Diary or Signal Failure Register as the case may be by Station Masters at either end of the affected station. The Section Controller shall also keep a note in his chart indicating the action taken by him.

4. **FAILURE OF LIFTING BARRIERS**:

i) When the Gate cannot be closed due to failure of lifting barriers, The Gateman will immediately inform the SM/ BMCK, under exchange of Private number, and ensure that lifting barriers do not foul the track.

ii) He shall immediately fix red banner flag by day and red light by night on the post at that end first from which the train is approaching and then at the other end.

iii) Gateman shall secure the Gate against road traffic by means of safety chains and padlocks.

iv) After securing the Gate against road traffic, he shall show green hand signal flag by day and green light by night to the Loco pilot of an approaching train.

v) Station master on duty/BMCK shall issue caution order to the Loco pilot of departing DN train.

vi) The SM/ BMCK shall also advise the Station Master/ MNGD at the despatching end, under exchange of private number, to similarly issue a caution order to the Loco pilot before despatching a UP train into the block section from his end.

vii) The SM/ BMCK should also advise maintenance staff responsible for maintenance of the lifting barriers to rectify the defect at the earliest.

viii) Normal working will be resumed only after maintenance staff rectify the lifting barriers and issue reconnection/fit memo for the same.

**5. <u>OBSTRUCTION AT THE GATE</u>:**

i) If the Gate is broken by a road vehicle which is fouling the track, or if lifting barriers or any other part of the Gate foul the track, or if there is any other obstruction at the Gate, the Gateman shall Immediately fix red banner flag by day and red lamp by night on posts provided at both ends of the Gate for this purpose.
ii) Immediately after this, the Gateman shall advise the SM/ BMCK on duty regarding the defects/obstruction at the Gate under exchange of private number.
iii) Station master at BMCK on duty shall be advised to put the departure signals back to 'ON' position, if taken 'OFF' for a train.
iv) If there is no response from the SM/ BMCK after two or three attempts, he shall first protect the Gate and then inform him on phone.
v) Gateman shall then rush with detonator and red flag by day and red hand signal lamp by night in the direction of the approaching train and protect the Gate as stipulated in General Instruction for duties of Gateman under item No.1.4. (5).
vi) Thereafter he shall protect the Gate from the other direction also.
vii) He shall note down the particulars of the road vehicle, name of the Driver, owner and relay these details to the SM/ BMCK who shall not allow the trains unless he has been assured by the Gateman that the road vehicle or the lifting barriers are not fouling the track.
viii) The SM/ BMCK shall also inform the station Master/ MNGD under exchange of private umber, asking him not to despatch any train into the block section from his end, until the track has been cleared of all obstruction.
ix) After the track has been cleared of all obstructions the Gateman shall inform the SM / BMCK accordingly under exchange of private number.
x) Gateman shall secure the Gate against road traffic by means of safety chains and padlocks and thereafter exhibit green hand signal, if the Gate is not obstructed.
xi) The SM/ BMCK shall advise maintenance staff responsible for maintaining the lifting barriers Gates to repair the same at the earliest.
xii) Normal working will be resumed only after maintenance staff rectify the defective lifting barriers and issue reconnection/fit memo for the same.

6. **<u>OBSTRUCTION ON THE TRACK NEAR LEVEL CROSSING GATE</u>**:

If there is a rail fracture or obstruction on the track due to falling of a tree, fouling by road vehicle or derailment, which is visible to the Gateman, the Gateman and SM/ BMCK will adopt the procedure given under item No.5 above. If the obstruction fouls the level Crossing Gate, Gateman must keep the Gates closed against road traffic till the track is cleared of obstructions.

**7. <u>ACCIDENTAL ROLLING DOWN OF TRAINS</u>:-**

When the gateman seen that a train is rolling down or immediately after receipt of the information about accidental rolling down of the train , the gateman shall:-

i) First close the gate against the road traffic.
ii) Then immediately inform the SM on duty.

iii) He shall not open the gate till he ensured that the train has completely stopped.

**CERTIFICATE:- NOTHING IN THESE RULES SHALL BE READ AS CANCELLING AMENDING OR MODIFYING ANY GR & SR'S ANY OTHER RELEVENT RULES**.

| | | |
|---|---|---|
| S. SAINI<br>DSTE/SBP | K. NAVEEN RAJU<br>DEN/S/SBP | LINGARAJ GARTIA<br>DOM(G)/SBP |

## APPENDIX – 'B'

(Detail description of signaling and interlocking installations, instructions for working them normally and in emergencies etc. including power supply arrangements).

### 1. BRIEF DESCRIPTION OF THE SIGNALLING AND INTERLOCKING INSTALLATIONS:

**BISSAM CUTTACK** is a 'B' class station provided with Standard-III Interlocking. The station is provided with Route setting type Electronic Interlocking between points, signals, MSDAC circuits and other signaling gears. The station is equipped with Multiple Aspect Colour Light Signaling. All points and signals are power operated through a central **Visual Display Unit (VDU)** installed in the SM's Office.

### 2. DESCRIPTION OF OPERATOR CONSOLE CUM VISUAL DISPLAY UNIT (VDU):

The Operator Console cum Visual Display Unit (VDU) in dual configuration is provided for operation of Signals, points, Crank handles and controls etc. A mimic yard diagram based on SI plan No. **SIP.ECoR.SBP.BMCK.02** shall be displayed on the VDU. The VDU is used for controlling and monitoring the station. Indications on the station mimic diagram of VDU will be dynamically updated.

### 3. SYSTEM OVERVIEW

The PC-based (**operator VDU**) for the operation of Signals, Points, Crank Handles and Siding Controls, etc. The SM of a station (*hereinafter referred as* **operator**) required to be familiar on the specific stations of SWR (station working rules).

Operator VDUs consist of CPU with a color monitor, keyboard and pointing device (mouse). Through communication media the exchange of control and indication messages takes place with operator VDU. The Software is installed to display the Station Yard Mimic diagram on the operator VDU and it allows access to all functions by selecting menus with a click of mouse on the corresponding function icon. By selecting the menu, the function (Signal clear and cancellation, Route release, Point operation, Gate release etc.,) can be executed.

The operator VDU is used for controlling and monitoring the station. However, indications on the Station yard mimic diagram of operator VDU will be dynamically updated.

### 3.1. SM's HARD KEY:

Station master will turn on HARD KEY which is provided in counter box (SM-KEY), after turn on SM Key in VDU, SMR indication will appear and after that SM needs to turn on soft key (PC SM Key) for enabling VDU functions.

### 3.2. DUAL VDUs – MODE OF SELECTION:

The privilege has been given to the operator for controlling the station through VDU-1 or VDU-2. With Dual VDU concept, we can control either from VDU-1 or VDU-2. VDU Changeover between two System can be done by the following ways.

1. When the VDU-1 is active ONLINE, the SM KEY Status of VDU-2 will be in KEYOUT Condition with Red Color

2. Whenever SM wants to change the control from VDU-1 to VDU-2, he shall apply SM KEY 'IN' in VDU-2. During this time VDU-1 SM KEY will get KEYOUT and the Color will turn to Red. Vice-versa, the same operation will be applicable to change the Control from VDU-2 to VDU-1.

3. If ON-LINE VDU is failed, SM shall apply SM KEY 'IN' in Standby VDU. Then the Standby VDU will come to ON-LINE.

The operator VDU is having controls to operate the field gears through the Mimic diagram. A Mimic panel diagram displayed on the operator VDU is an exact replica of yard that suits SI plan.

## 4. CONTROL(S) & INDICATION(S):

### 4.1. ICONS AND INDICATIONS PROVIDED ON THE VDU:

In addition to mimic yard diagram including signal, points, track circuit, Axle counters, L.C. gates, sidings as indicated in the WRD, various other ICONS and indications have been provided on the VDU. A brief description of the same are described below.

| SN | ICONS | INDICATIONS | FUNCTIONS | REMARKS |
|---|---|---|---|---|
| 1. | PC SM KEY | Green Colour when key is 'IN' | Ensures operation of VDU by authorized person | Protected by pass word |
| 2. | --- | Emergency Route release – UP&DN | Flashing indication appears when Emergency route release operation is initiated. | For each operation concerned counter shall register one count higher. |
| 3. | Emergency Point operation key | Green light when key is 'IN'. Yellow light indication appears showing request for Emergency point operation is acknowledged. | Ensures emergency point operation by authorized person | Protected by Pass word. For each operation concerned counter shall register one count higher. |
| 4. | Point failure Ack. Button | Red | Flashing indication appears when any point fails. SM has to left click on the icon to acknowledge. | Buzzer will sound. On acknowledgement, buzzer stops. After verification at site inform S&T staff immediately if failure persists. |

| SN | ICONS | INDICATIONS | FUNCTIONS | REMARKS |
|---|---|---|---|---|
| 5. | Signal failure Ack. Button | Red | Flashing indication appears when any signal fails. SM has to left click on the icon to acknowledge. | Buzzer will sound. On acknowledgement, buzzer stops. Inform S&T staff immediately. |
| 6. | CH-1 to CH-15 buttons | Yellow lamp indicates 'KEY IN'. Red lamp indicates 'CH LOCKED' | In normal condition yellow lamp will be lit. Whenever the crank handle is locked in route or otherwise red indication will glow. | |
| 7. | UP Block release button Icon | Yellow –indicates prepared for Block release | On getting indication SM shall left click on the button icon which shall release Block Handle. | |
| 8. | DN Block release button Icon | Yellow –indicates prepared for Block release | On getting indication SM shall left click on the button icon which shall release Block Handle. | |
| 9. | 'DN Train Entering Section' muting button Icon | Yellow – acknowledged | On getting alarm/buzzer from block panel SM shall left click on the button icon to acknowledge it. | |
| 10. | UP Train arrival Ack button Icon | Yellow –indicates complete train arrived. | On getting indication SM shall left click on the button icon which shall mute the arrival buzzer coming from block panel. | After complete arrival of train this will be activated |
| 11. | Line Block button Icon | Magenta colour when blocked | SS/Dy. SS shall point the curser on the icons provided on the berthing track and right click. One drop menu will appear indicating line blocked and un-blocked, SS/Dy. SS has to select the required menu. | When line block is selected the concerned button on the particular line turns to RED. |
| 12. | UP IB axle counter reset key and button Icon | Red colour when key is 'OUT' and Green colour when KEY is 'IN'. | Ensures operation of VDU by authorized person. SM has to follow 'key in' procedure followed by left click on the button icon to reset the IB axle counter. | Protected by pass word. For each such operation, concerned counter shall register one count higher. |
| 13. | Permission | Yellow permission | To acknowledge SS/SM has to | -- |

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| SN | ICONS | INDICATIONS | FUNCTIONS | REMARKS |
|---|---|---|---|---|
| | received from MNGD ack. Button Icon | received. | left click on the ack. button | |
| 14. | Permission granted to MNGD ack. Button Icon | Yellow permission granted. | To grant permission for resetting SS/SM has to left click on the permission granting button | -- |
| 15. | UP train run away in IB section muting button (Section MNGD-BMCK) | Yellow-Acknowledged | On getting Alarm/Buzzer SS/SM has to left click on the button icon to mute the buzzer/alarm | |
| 16. | DN train run away in IB section muting button (Section BMCK-MNGD) | Yellow-Acknowledged | On getting Alarm/Buzzer SS/SM has to left click on the button icon to mute the buzzer/alarm | |
| 17. | DN IB axle counter reset key and button Icon | Red colour when key is 'OUT' and Green colour when KEY is 'IN'. | Ensures operation of VDU by authorized person. SM has to follow 'key in' procedure followed by left click on the button icon to reset the IB axle counter. | Protected by pass word. For each such operation, concerned counter shall register one count higher. |
| 18. | Permission received from THV ack. Button Icon | Yellow permission received. | To acknowledge SS/SM has to left click on the ack. button | -- |
| 19. | Permission granted to THV ack. Button Icon | Yellow permission granted. | To grant permission for resetting SS/SM has to left click on the permission granting button | -- |
| 20. | UP train run away in IB section muting button (Section BMCK-THV) | Yellow-Acknowledged | On getting Alarm/Buzzer SS/SM has to left click on the button icon to mute the buzzer/alarm | |
| 21. | DN train run | Yellow- | On getting Alarm/Buzzer | |

| SN | ICONS | INDICATIONS | FUNCTIONS | REMARKS |
|---|---|---|---|---|
| | away in IB section muting button (Section BMCK-THV) | Acknowledged | SS/SM has to left click on the button icon to mute the buzzer/alarm | |
| 22. | Common MSDAC reset key | Red light when key is OUT, Green light when the key is IN. Yellow light indication appears Line is verified clear from any obstruction | Ensures operation of VDU by authorized person. SM/SS has to follow the procedure to reset the Track section by left click on the button icon to reset the Track section. | |

**4.2.** A Physical SM key is provided in a box on SM table.

**4.3.** **PC SM KEY:**

To prevent the unauthorized operation by other than on-duty ASM/SM this facility is provided on VDU. On duty SM/ASM need to track the pointer to the “PC SMKEY” icon and by clicking the icon a drop down menu having the **KEY IN & KEY OUT** will appear.


By clicking the **KEY IN** menu using the left button of the mouse, a Password window will appear. SM/SS need to enter the password and press the OK Button provided on the Password window. User Name and password for this station is **ECOR** and **BMCK** respectively.


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Then PC SMKEY icon will turns to Green color. This will enable all the controls in VDU.


***VDU Control Changeover Operation:***

With Dual VDU concept, we can control either from VDU-1 or VDU-2. VDU Changeover between Two System can be done by the following ways

1. When the VDU-1 is active ONLINE, the SM KEY Status of VDU-2 will be in KEYOUT Condition with Red Color.
2. Whenever SM wants to change the control from VDU-1 to VDU-2, he shall apply SM KEY 'IN' in VDU-2. During this time VDU-1 SM KEY will get KEYOUT and the Color will turn to Red. Vice-versa, the same operation will be applicable to change the Control from VDU-2 to VDU-1.
3. If ONLINE VDU is failed, SM shall apply SMKEY 'IN' in Standby VDU. Then the Standby VDU will come to ONLINE.

## 4.4. ELECTRONIC INTERLOCKING (E.I) SYSTEM INDICATIONS:

### 4.4.1. K5BMC System Failure Indications:

In PC there are two system failure indications such as ET FL & EI FL. During the failure a Red colour indication will start flashing as shown in the below figure.

**a) ET LFL (Electronic Terminal Low Failure):**

When any one of the ETPIO2 board fails, a red colour flashing indication appears on ET LFL.

**b) ET HFL (Electronic Terminal High Failure):**

Similarly when all the ETPIO2 boards of the K5BMC system fail, it will be shown by the red flashing indication on ET HFL.

**c) EI LFL (EI System Low Failure):**

ET LINE2B status for two systems, Logic system Power Supply status, I/O Board & LINE2B Board Power Supply, OPC Converter Status & OPC Communication status for both the systems is monitored through EI LFL.
When any one of the above functions fail list will be displayed in EI LFL by a flashing red indication.

**d) <u>EI HFL (EI System High Failure):</u>**

ET LINE2B status for two systems, I/O Board & LINE2B Board Power Supply, OPC Communication status for both the systems & MTC Commutation status are monitored through EI HFL.

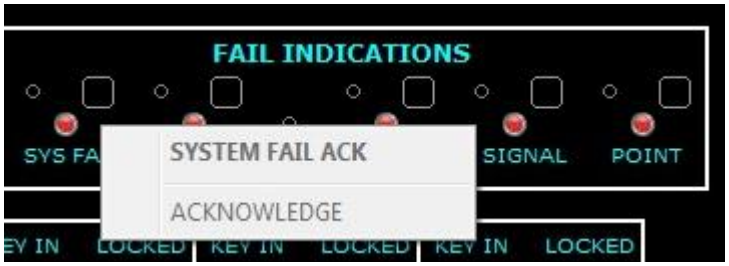
When any one of the above function fails it will be displayed in EI HFL by a flashing red indication.

OPC Communication Failure & ET LINE2B status failure indication will be displayed in EI HFL only when the healthy status is not available from both systems.



**e) System failure Acknowledgement:**

In the PC there is a Red colour button for acknowledging the system failure. Once the button is acknowledged, the buzzer will go off. The indication remains till the problem is rectified.




**f) K5BMC System Healthy Indications:**

When all the functions of K5BMC system is working properly without any failure, the System Healthy indication will be displayed by a steady green indication as shown in the below figure.



## 4.5. VDU ACTIVE INDICATIONS:

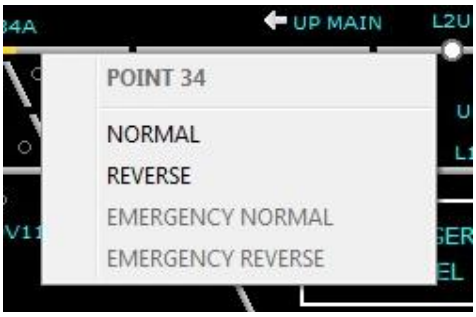
Whenever the VDU is in active condition a RBG sequence will be running in the top right corner of the screen. That is in a flashing sequence in the screen.

**DESCRIPTION OF CROSS OVERS/DS POINTS:-**

| Sl. No. | Point No. | Description |
|---|---|---|
| 1 | 51A/B | Crossover point between DN Main and UP Main at MNGD end. |
| 2 | 57 | DS point on over run line of line no.1 at MNGD end. |
| 3 | 53A/B | Crossover point between UP Main and Common Loop Line-1 at MNGD end. |
| 4 | 55A/B | Crossover point between DN main and DN loop line at MNGD end. |
| 5 | 61A/B | Crossover point between 3rd Main and 3rd Loop line at MNGD end. |
| 6 | 70A/B | Crossover point between Common Loop Line-1 and Goods Line taken from L-1. |
| 7 | 68A/B | Crossover point between Common Loop Line-1 and Goods Line taken from L-1 at THV end. |
| 8 | 56A/B | Crossover point between UP Main and Common Loop Line-1 at THV end. |
| 9 | 72 | DS point on over run line of line no.1 at THV end. |
| 10 | 54A/B | Crossover point between UP main and DN main at THV end. |
| 11 | 58A/B | Crossover point between DN main and DN Loop line at THV end. |
| 12 | 52A/B | Crossover point between UP main and DN main at THV end. |
| 13 | 60A/B | Crossover point between DN main and 3RD main at THV end. |
| 14 | 62A/B | Crossover point between 3RD main and 3RD Loop Line at THV end. |
| 15 | 66A/B | Crossover point between 3RD main and 3RD Loop Line at THV end. |
| 16 | 64A/B | Crossover point between 3RD Loop Line and Banker siding at THV end. |
| 17 | 74 | DS point on over run line of 3RD main at THV end. |

## 4.6. OPERATION AND INDICATION OF POINT:

To Operate the Point the SM/SS needs to track the mouse pointer to concerned Point Button on the VDU, after clicking by the left button of the mouse a popup menu will appear as below:




### 4.6.1. REVERSE TO NORMAL OPERATION:

Track the pointer to **NORMAL** menu and click, a Normal flashing indication will appear, the indication will be steady after the point is set to Normal.

### 4.6.2. NORMAL TO REVERSE OPERATION:

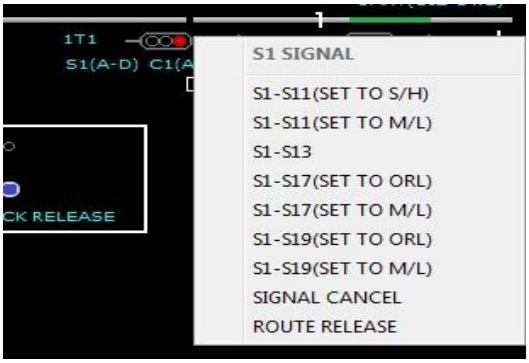
Track the pointer to **REVERSE** menu and click, a Reverse flashing indication will appear, the indication will be steady after the point is set to Reverse.

### 4.6.3. POINT INDICATIONS:

When the point is free, a steady yellow strip of light will appear either in the normal portion of point zone (In case of cross over at both ends) or in the reverse portion of point zone depending up on the position of point, indicating that the point is set. When the point is operated from the normal to reverse the strip of light in the normal portion is disappears and starts flashing in the reverse portion and becomes steady when the point is set and detected. Similarly when the point is operated from the reverse to normal the strip of light in the reverse portion disappears and starts flashing in the normal portion and becomes steady when the point is set and detected. When the point is engaged in a route, a yellow indication will appear near the point and red indication appears in the point lock indication showing that the point is locked and cannot be operated.

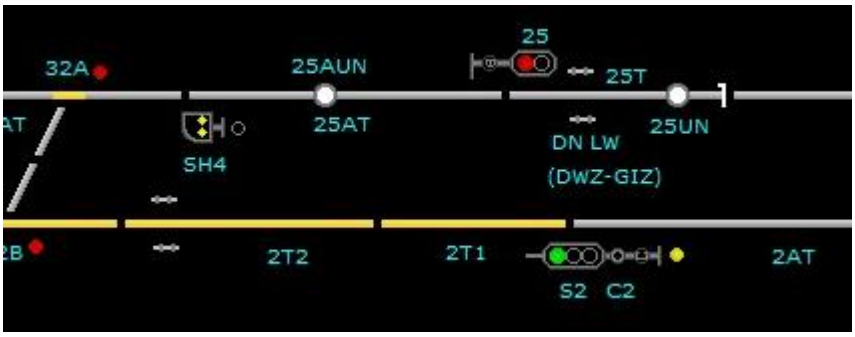
## 4.7. SIGNAL OPERATION:

To Take-Off a Signal with the desired route the SM/SS needs to track the mouse pointer over the concerned Signal on the VDU, after clicking by the left button on the mouse a popup menu will appear as below:



### 4.7.1. SETTING A ROUTE:

To set a route of a signal, click on a possible route of the signal, after doing, so a RED colour route initiation indication will be flashing and all the Normal/Reverse set indication of the Points in the route will start flashing if it is not available in required position. After setting of points in the route, overlap and isolation in required condition flashing indication will become steady and a complete yellow 'Route set' indication will appear over the route right from replacement track of the signal to the last track of overlap section of the route. Also the point lock indication will appear through Red indication near the point. Finally a route locked yellow steady indication will appear immediate to rear of the signal. Now the signal will be taken-off. The yellow route set indication will turn to red when the train occupies the concerned track circuit.



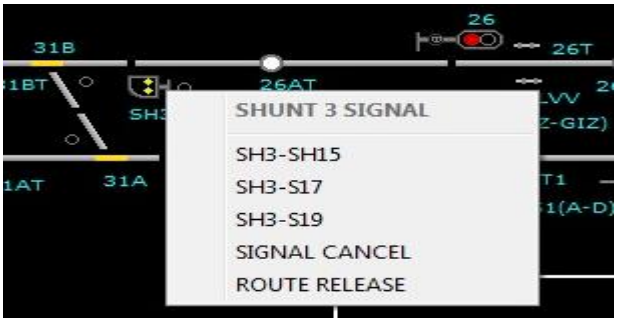

***Conditions for setting a route:***

The following condition to be ensured before setting the route by the SM/SS.

1. All the Crank handles of the required route related points to be in Key-IN condition.
2. All the related Siding control keys to be in Key-In condition.
3. If any Level Crossing gates are falling under the route that should be closed and locked (KEY IN)

### 4.7.2 SHUNT SIGNAL OPERATION:

For setting and cancelling the signal route for the shunt signal the same procedure shall be followed as explained in section for Main signal operation. To Take-Off a Shunt Signal with the desired route the SM/ASM needs to track the mouse pointer over the concerned shunt Signal on the VDU, after clicking the left button on the mouse a popup menu will appear as below:

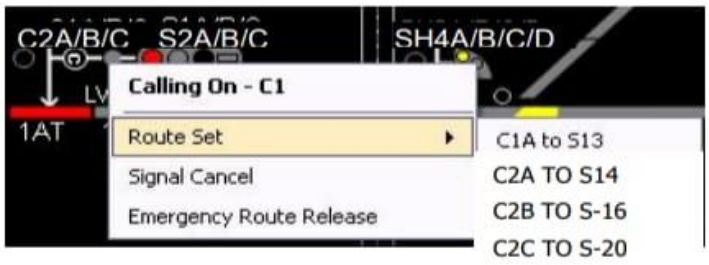


Then click the button of mouse on the required route on pop-up menu. After doing so, desired route will be initiated and the Shunt signal will be taken off.


### 4.7.3 CALLING ON SIGNAL OPERATION:

Calling-on signal route set operation is similar to the same procedure as mentioned for the main signal. For calling-on Signal, route is set after a train occupies the approach track section in immediate rear of the Home signals and Starter signals. The calling on Signal is cleared after a lapse of 60 Seconds for Calling on below Home signals and without any Time delay for calling on provided below starters, provided other conditions are fulfilled.

To take “OFF” Calling-on signal the train must come to a stop at the foot of the Home signal, occupying the track section (1AXT, 2AXT,3AXT as the case may be) in rear of the signal. When a train occupies the track section a RED light strip will appear on the VDU. The particular route on which train is intended to be received shall be set by tracking the pointer in VDU on to the signal below which the calling on signal is provided. Left click on the calling-on Signal which will appear a pop-up menu as follows.

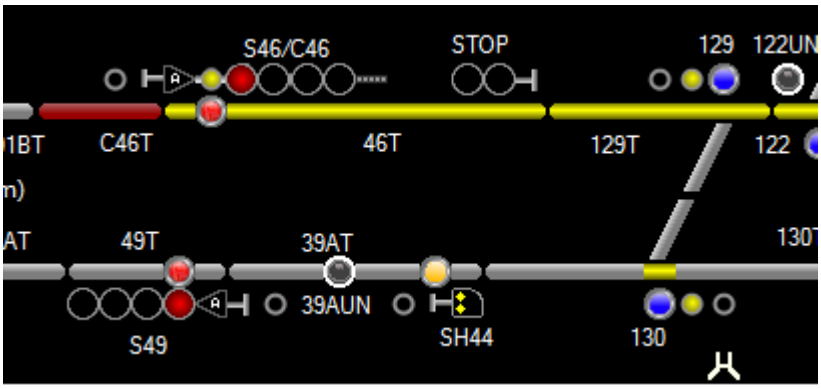



Then the SM must drag the pointer and click over the required route as a result of which the calling-on signal will blink for 60 seconds. For all home signals the time delay is 60 seconds, the Calling-on signal clears i.e. a yellow light glows at the concerned calling-on signal on the VDU.

**Taking off Calling on signal below starter signal**:

In case of Calling ‘ON’ signal below starter signal, SM on duty should ascertain that the train has stopped near the starter signal. The particular route on which train is intended to despatch shall be set by tracking the pointer in VDU on the signal below which the Calling on signal is provided. Left click on the calling on signal which will appear a pop menu. Then the SM must drag the pointer and click over the required route as a result of which

the calling on signal clears immediately without any time delay ie., a yellow light glows at the concern calling on signal on the VDU.




This action will be recorded in a respective counter of the counter box provided on SM's table. Every such operation shall be recorded by the SS/SM on duty along with the reasons to do so. The calling-on signal route can be released after complete arrival of the train by Signal cancellation only.

**NOTE:**

SM on duty to ensure that no through signals are given while receiving a train on Calling-on signal.

The provision of taking off of calling-on signal even during failure of any track section beyond Home Signal/Starter Signal is provided

## 4.8 CRANK HANDLE CONTROL OPERATION:

Normally a 'KEY IN' (Yellow) indication will appear on the VDU indicting that the Crank Handle is free. To Transmit or Release control of the Crank Handle, click on the crank handle control button provided like the following button on the VDU.


The appearing pop-up menu gives details of the possible commands on the Crank Handle.

For Transmitting the Crank Handle KEY to the field personnel, SM has to transmit the control by clicking **TRANSMIT** on menu of the Crank Handle Button. After transmission, the KEY IN indication will start flashing; now the KEY can be extracted from the EKT. After extracting the key from the EKT, the key IN indication will disappear. This action will be recorded in a respective counter of the counter box provided on SM's table. The counter will increment the number for each and every such action and also, this number should be recorded by the SM on duty who shall record the details of the Crank Handle operation along with the latest counter number in a register.

When the Manual point operation is completed, after putting the KEY back in the EKT, corresponding Crank Handle KEY IN flashing indication will appear on the VDU. Now the operator has to Release the control for the steady indication, for that click on the Crank Handle and select the **RECEIVE** in the menu appeared.

A Crank handle locked indication (Red) will appear, when the particular point is locked through the signal route set over it or engaged on route setting in any other way.

**4.9 LC GATE OPERATION:** Not applicable for this station.

**4.10 OVERLAP TIME RELEASE:**

A separate indication for each overlap is provided near the starter signal to indicate the free or locked condition of overlap. This indication light will glow when overlap is locked by any Home Signal route and there will be no light when overlap is free. The locked indication starts flashing when the approaching train clears the rear end point zone track and occupies the berthing track. After a time release of 120 seconds the white flashing light will disappear indicating concerned overlap is free.

## 5 EMERGENCY OPERATIONS:

To carry out different emergency operations the following procedures are to be followed.

### 5.1. CANCELLING A ROUTE/ EMERGENCY ROUTE RELEASE:

To cancel a signal route when the route is set and the signal in taken-off, click on the signal cancellation menu (Main/ Calling on) of the concerned signal, the signal will immediately go to ON aspect, after doing so click on the Route release menu. Since all the Signals are having Dead approach, both the route locked indication near the signal start flashing. After the completion of 120 Seconds, route nomination and route locked flashing indication disappears and veeder counter provided for the route release will change to next higher digit. This number should be recorded by the SM on duty who shall record the details of the Route cancellation along with the latest counter number in a register.

### 5.2. EMERGENCY POINT OPERATION:

When the point zone track circuits failed without any point lock condition through respective signal route(s), a point can be operated by the Emergency Point operation.

***Note:*** *Before resorting to this operation SM on duty shall verify that the point zone is clear of any vehicle occupying the track section and the same is clear of any obstruction.*

Then he shall make the Physical Emergency Key (EM KEY) is to be 'IN' which is placed on a counter box. Indications of Emergency Key i.e KEY IN & KEY OUT indications are provided on VDU.

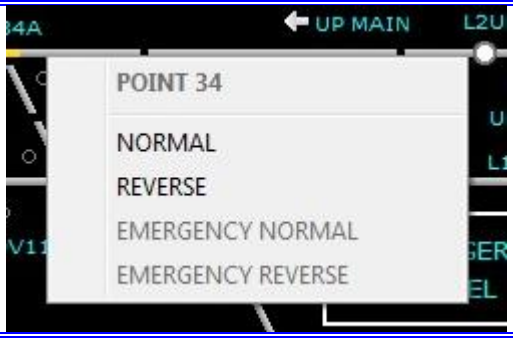


To 'KEY IN' the Emergency key will be inserted and turn right and KEY IN (Green) indication appears on the VDU.


Then Emergency point operation can be done to either normal or reverse as per requirement.

### 5.2.1 EMERGENCY NORMAL OPERATION:

Track the pointer to the corresponding Point which is intended to operate and then click the mouse button. After doing so, a pop-up menu will appear as below.




Track the pointer to EMERGENCY NORMAL menu of the corresponding Point and click. After doing so point gets operated and Normal flashing indication will appear the indication will be steady after the point is set to Normal.

### 5.2.2. EMERGENCY REVERSE OPERATION:

Track the pointer to EMERGENCY REVERSE menu of the corresponding Point and click. After doing so point gets operated Reverse flashing indication will appear, the indication will be steady after the point is set to reverse.

After the Emergency point operation a specific veeder counter will change to its next higher digit and this number should be recorded in the register provided for this purpose by the SM/ASM on duty who shall record the details of the Emergency Point Operation along with the latest counter number in a register.

After the completion of the Emergency point operation, Emergency Key (EM KEY) shall be taken out, and kept in the custody of SM on duty.

***Note:*** *The Emergency Point Normal and Emergency Point Reverse options are normally in disabled mode. These are enabled only when the Emergency Key is* ***IN*** *position.*

## 5.3. EMERGENCY CRANK HANDLE RELEASE OPERATION:

When a crank handle is locked due to route set earlier is not released or otherwise. To Transmit or Release control of the Crank Handle, SM on duty shall cancel the relevant signal first and then click on the crank handle control button icon provided like the following on the VDU. On clicking, the pop-up menu gives details of the possible commands on the Crank Handle.


For Transmitting the Crank Handle KEY to the field personnel SM on duty has to click on '**TRANSMIT'** menu. After transmission the 'KEY LOCKED' (Red) indication will start to flash for 120 seconds & 'KEY IN' remains steady. After this the 'KEY LOCKED' indication will vanish & 'KEY IN' indication will start to flash. After extracting the key from the RKT, the 'KEY IN' indication will disappear. When the Manual point operation is over, after putting the crank handle key in the RKT, flashing 'KEY IN' indication will appear on the VDU, now the SS/SM on duty shall Release the control for the Steady indication by clicking **'RECEIVE'** menu.

This action will be recorded in a respective counter of the counter box provided on SM's table. The counter will increment the number for each and every such action and also, this number should be recorded by the SM on duty who shall record the details of the Emergency Crank Handle Operation along with the latest counter number in a register.

5.3.1. **EMERGENCY CRANK HANDLE RELEASE DURING FAILURE OF BOTH THE VDUs (ACTIVE & STANDBY):**

When both the VDUs (Active & Stand by) provided for operation of signals & points in EI station cease to work at the same time due to power failure or what so ever the reason, the SM on duty shall put the VDU key to middle position and then the key (ECH) to right provided in the in the key box fixed on the top of the SM table. By resorting to this time is initiated and flashing indication will appear in the key box fixed on the SM table . After 120 seconds the flashing indication will be steady which results that all the crank handles are released at a time at CH location boxes. The SM on duty can set the required point/points through crank handles manually by extracting the key/keys from EKTs provided in the location boxes

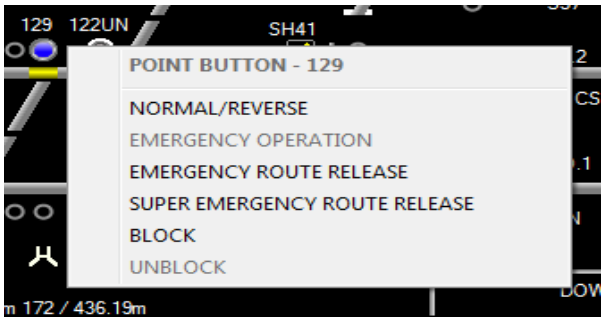
| CRANK HANDLE CONTROLS FOR EMERGENCY OPERATION OF POINTS | | |
|---|---|---|
| **CRANK HANDLE** | **CONTROL POINTS** | **IN LOCATION BOX** |
| CH1 | 51A/B | IN UP CH LOC. No.1 |
| CH2 | 52 A/B, 54 A/B | IN DN CH LOC. No.1 |
| CH3 | 53 A/B | IN UP CH LOC. No.1 |
| CH4 | 56 A/B | IN DN CH LOC. No.2 |
| CH5 | 55 A/B | IN UP CH LOC. No.2 |
| CH6 | 58 A/B | IN DN CH LOC. No.4 |
| CH7 | 57 | IN UP CH LOC. No.1 |
| CH8 | 60 A/B | IN DN CH LOC. No.3 |
| CH9 | 62 A/B | IN DN CH LOC. No.4 |
| CH10 | 61 A/B | IN UP CH LOC. No.2 |
| CH11 | 64 A/B | IN DN CH LOC. No.3 |
| CH12 | 66 A/B | IN DN CH LOC. No.3 |
| CH13 | 68 A/B, 70 A/B | IN DN CH LOC. No.5 |
| CH14 | 72 | IN DN CH LOC. No.2 |
| CH15 | 74 | IN DN CH LOC. No.1 |

5.3.2. **EMERGENCY CRANK HANDLE RELEASE DURING FAILURE OF BOTH EI (ACTIVE & STANDBY) SYSTEMS:**

When both the EI system fail to operate due to power failure or whatever be the reason, all the crank handles are released at a time and the SM on duty can set the required point/points through Crank handles manually by extracting the key/ keys from EKT provided in the location boxes. The signaling staff ie., SSE/JE/SIG or ESM shall be intimated immediately regarding the failure for rectification of the same.

**5.4. BLOCK AND UNBLOCK (REMINDER COLLAR) OPERATION:**

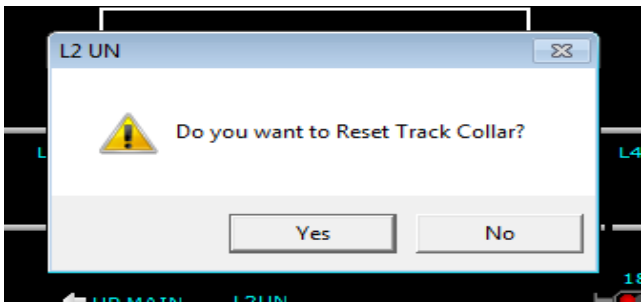
Block option is used to block the Signal button, Point button and Route Button. Block Operation prohibits the setting of routes, releasing the route, Operation of points by the user. A typical Block & Unblock menu is shown below.



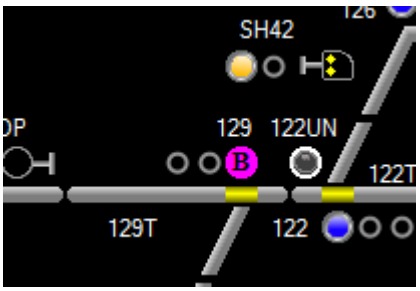

### 5.4.1. BLOCK OPERATION:

By placing the mouse pointer over any button and pressing the left mouse button, a popup menu with a list of available menu items will be displayed near the control symbol as shown above.

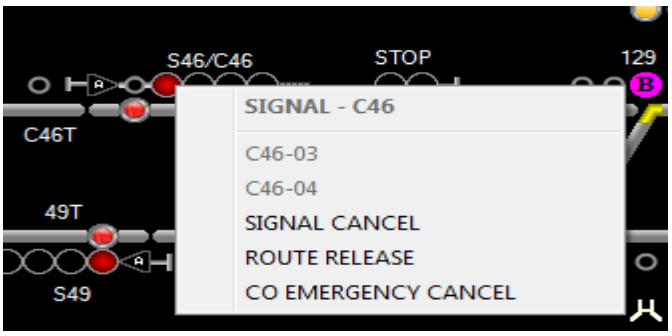
Select the "BLOCK" menu item from the list and press left mouse button or Enter key in the keyboard. A confirmation box appears as shown in below.




Now click YES option of the confirmation window and a Magenta Colour Block indication will be displayed as shown in below.

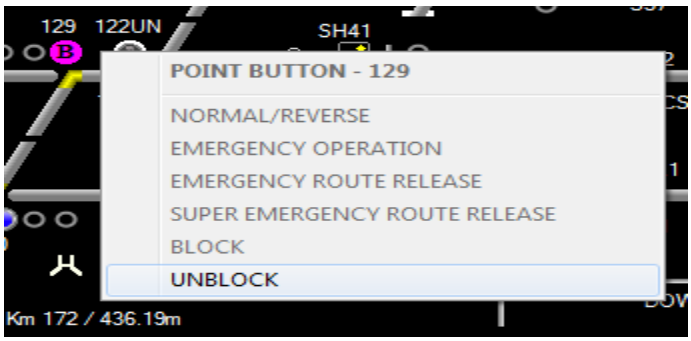



Once Block command is applied, all routes across the track in both directions are prohibited by disabling menu items of the respective signals as shown in below.

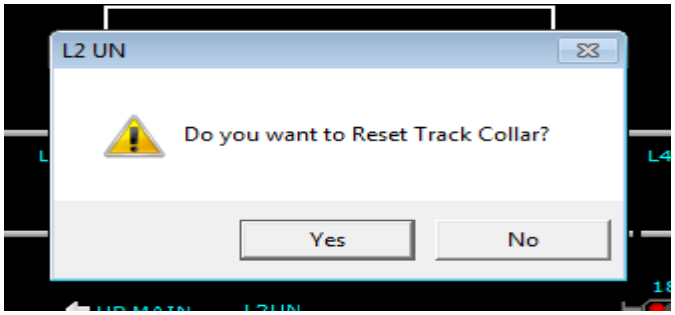


### 5.4.2. UNBLOCK OPERATION:

To unblock a button, place the mouse pointer over the blocked button and press the left mouse button. A popup menu with a list of available menu items will be displayed near to the control symbol as shown in below. Select the "UNBLOCK" menu item from the list and press the left mouse button or Enter key in the keyboard.



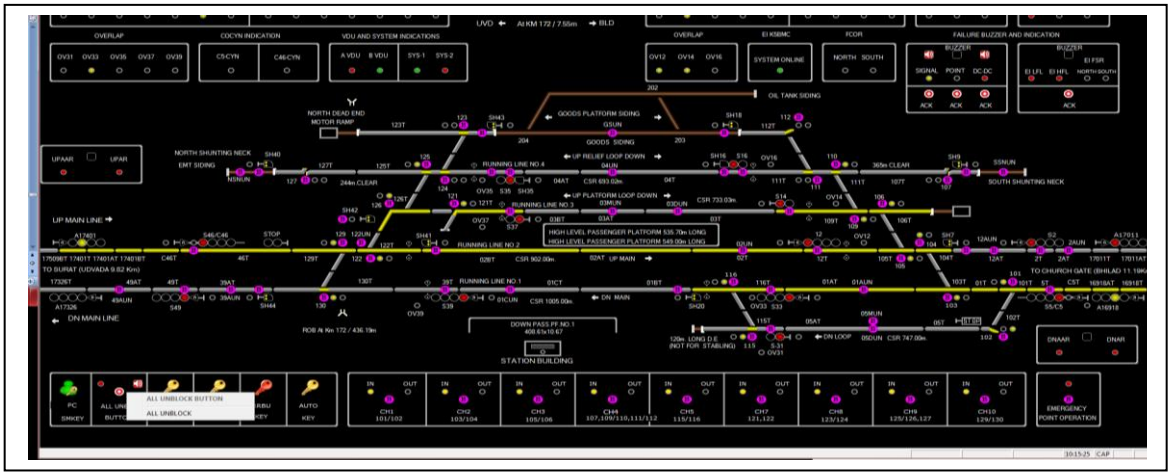

A confirmation message box as shown in below will be displayed to get the confirmation from the user. UNBLOCK command will be sent to EI system to unblock the button, when “Yes” buttons is clicked.




The Magenta Block indication will be removed after the button is unblocked by the EI system. If "No" is selected from the message box, then the unblocking will be cancelled. Once the button is unblocked, setting of all routes across the track is possible in both directions.

### 5.4.3. All UNBLOCK OPERATION:

This operation allows user to unblock all block buttons in track layout. When all buttons gets block, it displays as shown below. To unblock the buttons, user should login/key in first. To unblock all buttons, place the mouse pointer over the ALL UNBLOCK BUTTON and press the left mouse button. A popup menu with a list of available menu items will be displayed near to the control symbol. Select the "ALL UNBLOCK" menu item from the list and press the left mouse button or Enter key in the keyboard.



### 5.4.4 POWER BLOCK:

Power block indication through drop down menu for all lines are provided in power block icon on the VDU to remained SM for power block of line.

On right clicking for respective line, the ON/OFF pop-up menu appears. By selecting ON menu RED indication will appear and selecting OFF menu BLUE indication will appear.

## 6. DIGITAL AXLE COUNTER:

High Availability Digital Axle Counters are provided as a Last Vehicle Checking Device (LVCD) for Both UP and DN block section between BMCK-MNGD, BMCK-THV and in single line block section between BMCK-MNGD (3$^{RD}$ line).

The position of the Block section whether cleared or occupied are reflected in the VDU provided in the Station Master's office which shows 'GREEN' when the Block Section is clear and 'RED' when occupied. Whenever a train enters into the Block Section, "Block Section Clear" indication 'GREEN' for the particular block section disappears and 'RED' indication appears.

After complete arrival of the train the 'RED' indication will disappear and 'GREEN' indication will appear. If after the complete arrival of a train the 'RED' indication does not change to 'GREEN' it should be assumed as Block Instrument failure for the particular section and necessary action as per GR.14.13 is to be followed. The axle counters are interlocked with the respective block instruments for that section. If Axle Counter fails, Advanced Starter signal shall not come to 'OFF' and the concerned instrument shall remain locked in last operated position for that section.

In case of failure of Digital Axle Counter, the SM on duty should resort to resetting of the same along with the SM on duty of adjacent station after confirming that the whole of the train sent by sending station has been arrived at the receiving station. The resetting of the LVCD shall be initiated as mentioned below at both the stations after exchanging the Private Number.

A Reset Box is provided on SM's table for each LVCD section to reset the Axle Counter in case of failure of LVCD. Reset Box gives the status of the block section i.e. Clear (GREEN), occupied (RED), preparatory reset (Miniature GREEN) and power on indications (WHITE). It also having the Reset Key, push button for resetting the LVCD and a counter is provided to record the operation.

## 6.1 RESETTING OPERATION FOR LVCD (DIGITAL AXLE COUNTER):

After complete arrival of train, if the LVCD of the section does not clear and Block section clear indication (Green) does not appear in the VDU, the receiving station SM shall apprise the sending station SM through telephone for resetting the Axle Counter giving the details of last train that has arrived complete at his station and the block section is clear.

The receiving station shall inform the sending station as to whether the last train that entered into the section has arrived or not. And, if arrived fully shall so intimate the SM of sending station authenticated by exchanging Private number.

Then the SM on duty shall adopt the following resetting procedure at both the sending and receiving stations individually.

a) On being advised by SM of BMCK Station, SM of MNGD/THV should perform the following step by step procedure from (b) to (i) for resetting the Digital Axle Counter.
b) SM of BMCK Station and MNGD/THV Station shall then Insert SM's reset key, and turn right.
c) Press simultaneously both the Push button and the Reset Key which are provided on the Reset Box for at least 5 seconds continuously at MNGD/THV and BMCK station.
d) Release SM's Reset Key and Push button.
e) Turn the SM's Reset Key to left and remove it.
f) The system goes to preparatory reset state and preparatory reset miniature indication (Green) glows on the Reset box. The counter reading incremented after a gap of 5 seconds approximately.
g) The counter reading should be recorded in the concerned register by SM on duty.
h) One train is to be piloted out into the section to make the system normal.
i) The SM on duty shall record it in the Train Signal Register indicating the resetting operations in detail i.e. train number, time, Private Number exchanged with SM of sending station and giving reasons for the resetting operation.
j) If the axle counter works properly, then Block Section cleared indication 'Green' will appear on the Reset box and the concerned Block working will be normalized after arrival of train which is piloted out.
k) If the LVCD section indication does not appear 'Green' and continues to show 'RED' indication, the concerned Block instrument shall be suspended and failure intimation is to be given to sectional signal Maintainer/JE/SE (Signal) for early rectification.

## 6.2 MULTI SECTION DIGITAL AXLE COUNTER (MSDAC)

### 6.2.1GENERAL:

Entire yard of BISSAM CUTTACK (BMCK) station from UP Home signal to DN Home signal including calling on tracks section on all the lines is provided with Dual MSDAC system in place of conventional DC track circuits to detect the presence of train. When any Track Section is occupied that particular Track Section will show '**RED**' indication on the operating VDU as well as on Reset box. However, MSDAC system will not detect any vehicle which is placed abruptly in between the MSDAC detection points. Dual or redundant MSDAC system has two independent parallel system viz. system-A & system-B working simultaneously to detect occupation/clearance of the Track Sections. In case of failure of any one of the system i.e., System 'A'/ System 'B' the other system shall take care of the concerned Track Section. This is to facilitate dealing of trains with signals during the failure of any one of the systems. Facility for MSDAC Reset operation, in case of failure of both the systems is provided through VDU at the SM's office.

**Communication:** Magneto Telephone is provided between SM Room and LV Boxes

### 6.2.2 CUSTODY OF KEYS:

Line Verification Keys and Line Verification Location Box Keys are provided for point zone and loop line tracks. These keys shall be kept locked in a separate box in the SM's office and shall be under personal custody of the SM on duty.

### 6.2.3 COUNTERS FOR RECORDING RESET OPERATIONS:

Each and every operation of the Reset operation through VDU is Counted on Zone wise counter provided in the counter box for East/West zone and shall be recorded in the Counter Register before and after Resetting operation as per the following format

| Sl. No. | Date | Time | Track section No. | Track section failed after the arrival/departure of Train No. | Counter reading before resetting | Counter reading after resetting | Train No. dealt after resetting | Reason | Signature of Authorized Person for Line Verification | Signature of SM on duty |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

### 6.2.4 RESETTING PROCEDURE OF MSDAC

MSDAC is provided with two types of resetting features corresponding to failures of system viz,
1. Auto Reset, 2. Manual Reset through VDU.

#### A. AUTO RESET:

The Auto Reset feature is provided for systems of all Track sections. Each Track Section is provided with Dual detection system i.e., system-A and system-B which detects occupation/clearance of the Track Section independently. In case of failure of any one system of MSDAC, the status of the track section is verified by the other healthy system

monitoring the section and shows clear indication in the Reset box in case the Track Section concerned is not occupied. In Dual detection system-A and system-B of MSDAC has internal system for Auto resetting. The failed system will be reset through Auto Reset feature from the working system automatically. During Auto resetting SM on duty can receive or Despatch trains on Signals.

**B. RESET THROUGH VDU:**

In the event of failure of both System 'A' and System 'B' of any Track Section SM on duty shall initiate Manual Reset. Manual Reset is provided to all Track Sections as per the following details:

| SL. NO. | LINE/SECTION | TYPE OF RESET | TO BE APPLIED BY | AXLE COUNTER STATUS |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| 1 | Block Section/ IB Section | Preparatory Reset | On Duty SM/SS at both end of Block Section | After operation in and will show 'CLEAR' only after matching 'Count In' with 'Count Out'. |
| 2 | Main Line/Run through Line | Preparatory Reset | On Duty SM/SS with another operating staff. | After operation in and will show 'CLEAR' only after matching 'Count In' with 'Count Out'. |
| 3 | Point Zone/Loop Line/Siding | Conditional Reset | On Duty SM/SS with another Operating Staff | Will show 'CLEAR' after operation. |

### 6.2.5 MSDAC RESETTING IN STATION SECTION:

At BMCK yard MSDAC is provided in station section. Resetting of MSDAC shall be done through VDU by SM/SS on duty by following the procedure as below:

(a) **Cooperative type for Point Zones/Loop Lines/Sidings**:

Once the Axle Counter has failed and is showing fault indication, the on duty SM/SS shall first arrange to verify that the line on which the train has to be received is physically clear of any obstruction. Such physical verification of failed Track Section shall be done through Line Verification Box (LV Box) which shall be close to the line to be verified. The resetting shall be cooperative and done jointly by the on duty SM/SS along with another Operating Staff, who shall verify physical clearance of line and operate the Line Verification Box for the failed Track section of Axle Counter. After resetting done by SM on duty, trains can be admitted on signal.

(b) **Main Lines/Run Through Lines**:

(i) Preparatory Reset arrangement shall be initiated by the SM/SS on duty after ensuring that the failed Track Section is cleared of all obstruction.

(ii) SM/SS on duty shall activate Virtual Reset Key on the VDU by entering required Password for the purpose. On clicking on the failed Track Section a reset drops down menu will appear on the VDU and apply RESET.

(iii) 'PREPARATORY RESET' indication (GREEN) will appear near the failed Track Section on the VDU. However, the failed Track Section shall continue to show 'RED' indication on VDU.

(iv) The first train after the reset operation may be received by SM/SS on duty either by taking off 'Calling On' signal or by Piloting of trains as per the extant rules after verification of the clearance of the reception line.

(v) Each and every reset operation shall be recorded in the Train Signal Register and Diary by the SM/SS on duty.

If the track section indication does not appear 'Green' and continues to show RED' indication after resetting of the failed track section, the concerned signal movement over the track section shall be suspended and failure intimation is to be given to sectional signal Maintainer/JE/SE (Signal) for early rectification.

**Note** : Before Manual Resetting of the track section of MSDAC system, SM on duty shall ensure and satisfy himself that the failed track section is free from all obstructions.

## 7. SIGNAL LAMP FAILURE INDICATION AND BUZZER ACKNOWLEDGMENT:

LED signal lamps have been used for all signals at this station. In case of failure of the same LED signal, will be indicated by showing 'RED' flashing light on VDU along with audible buzzer, which can be acknowledged and muted by pressing the 'SIGNAL FAILURE ACK' button icon. However the RED flashing light will continue to glow until the lamp is replaced by a new lamp. For rectification of failure SM on duty should inform the concerned S&T staff.


## 8. POINT FAILURE INDICATION (RED), POINT FAILURE BUZZER AND POINT FAILURE ACKNOWLEDGEMENT:

Whenever there is a failure of point due to non-setting, point failure indication flashing light appears near the point button icon along with point failure Buzzer. The buzzer stops when the point failure acknowledgement button icon is pressed, but the flashing light above the ACK button shall continue to glow. The flashing light at the concerned point zone shows the defective point. After the failure is rectified, the flashing light above the 'POINT FAILUR ACK' button will disappear.

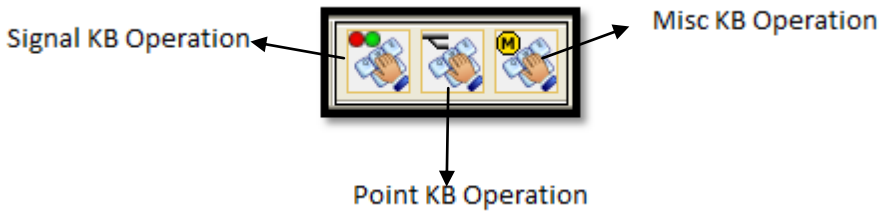

## 9. POWER FAILURE INDICATION AND BUZZER ACKNOWLEDGEMENT:

The DC-DC Converter failure indication will flash & relevant buzzer sounds whenever a power failure is noticed.
The power failure buzzer will be muted once the relevant acknowledgement button has pressed and the flashing indication is continued in the VDU till the problem is rectified.


## 10. KEY BOARD OPERATIONS:

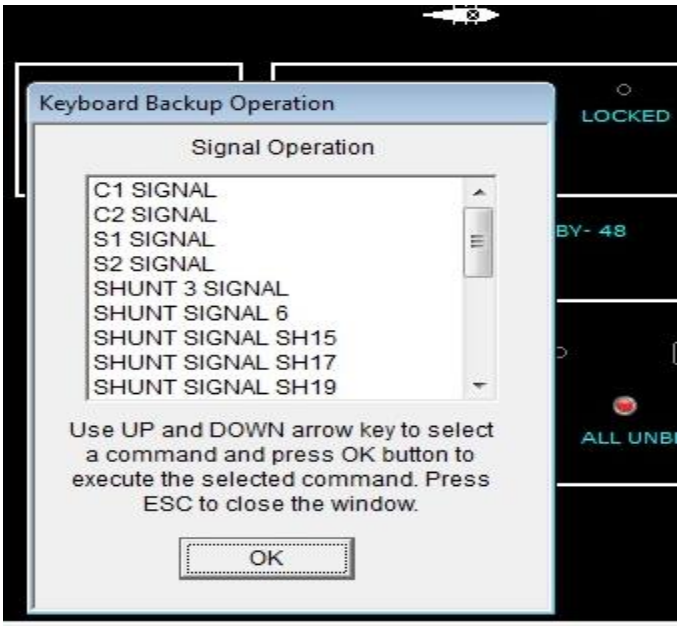
Essentially, "Keyboard Backup operation" is an alternative to the mouse operation. In the event of mouse absence or failure of mouse, the user is still able to operate the K-VDU application using the Keyboard shortcut keys.
The "Keyboard backup" group has three buttons on the toolbar:-

1. Signal KB (Keyboard) operation.
2. Point KB operation.
3. Misc KB operation.



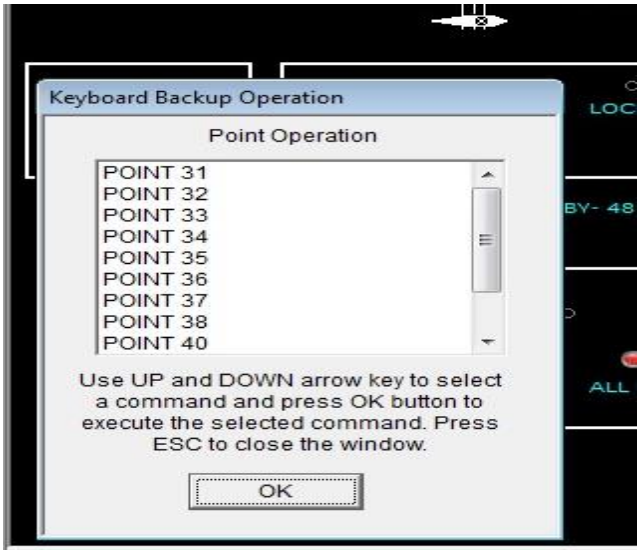

### 10.1 SIGNAL KEY BOARD OPERATION:

Alternatively signal commands can be accessed using the shortcut "Ctrl+S" from the keyboard. When the shortcut is pressed, a dialog box with all signal menus will appear as shown in below at the bottom left corner of the window. Using Up (↑) and Down(↓) arrow keys of the keyboard select the desired item and press "Enter" key on the keyboard. A popup menu with all possible control menu items will appear near to the control and the dialog box will be closed. Again using arrow keys select the desired command to be issued and press "Enter" key on the keyboard. After the command is selected, it will be sent to EI system and the popup menu will be disappeared.




## 10.2 POINT KEY BOARD OPERATION:

Alternatively, the point commands can be accessed using the shortcut "Ctrl+P". When the shortcut is pressed in the keyboard, a dialog box with a list of point commands will appear at the bottom left corner of the window as shown in below. Using Up (↑) and Down(↓) arrow keys of the keyboard, select the desired point command and press "Enter" key on the keyboard. A popup window with all possible menu items will appear near to the control and the dialog box will be disappeared. User by using "Up" and "Down" arrow keys select the desired command and press "Enter" key on the keyboard. After the command is selected, it will be sent to EI system and the popup menu will be disappeared.



### 10.3 MISCLLENEOUS KEY BOARD OPERATION:

Alternatively, the miscellaneous menus can be accessed by using the shortcut "Ctrl+M". When the shortcut is pressed on the keyboard, a dialog box with a list of miscellaneous commands will appear at the bottom left corner of the window as shown in below.

Using Up (↑) and Down(↓) arrow keys of the keyboard, select the desired miscellaneous command and press "Enter" key on the keyboard. A popup window with all possible menu items will appear near to the control and the dialog box will be disappeared. User by using "Up" and "Down" arrow keys select the desired command and press "Enter" key on the keyboard. After the command is selected, the command will be sent to EI system and the popup menu be disappeared.

## 11 COUNTERS:

The following counters are provided for recording the actions such as emergency point operation, emergency route release etc.

1. Emergency Route Release Counter.
2. Emergency Point Operation Counter.
3. Emergency Crank Handle Release Counter.
4. Calling on Counter.

In addition to the above counters, a counter is provided on the Reset Box of each Block section LVCD. The increment in counter number for each and every such action should be recorded by the SS/SM on duty who shall record the details of the Operation along with the latest counter number in a register.

## 12 MULTI SECTION DIGITAL AXLE COUNTERS:

Both UP & DN main lines, Common loop, DN Loop, 3rd Main Line, Loop line and all the point zone track sections are monitored by Multi Section Digital axle counters as L1XT1, L1XT2, L2XT, L3XT, L4XT, L5XT, L6XT, 51AXT, 51BXT, 55AXT, 55BXT, 11AXT, 61AXT, 61BXT, 52BXT, 52/54XT, 60/54/58XT, 56AXT, 56BXT, 58AXT, 58BXT, 60/66XT, 62/66XT, 64XT, 14AXT.

Approach track sections 1AXT, 2AXT, 3AXT of 5 Rail length for Calling on Signal are provided in rear of the Up and DN & 3RD Line UP Home signals respectively. In addition there are short length track sections 2XT1, 2XT2 in advance of DN Home Signals and 1XT1, 1XT2 & 3XT are in advance of UP Home Signals are also provided. Similarly there is track section 48XT beyond DN Advanced Starter Signals for replacement of Last Stop Signal. From the last trailing point/fouling mark in either side of yard to Advanced Starter Signals are also provided with MSDAC i.e 45XT, 46AXT and 48AXT in UP and DN directions respectively.

Indications for the above MSDAC track sections are available on VDU. Yellow Strip on VDU indicates Route is set and track is clear and Red strip indicates Track is in occupied condition.

On account of the doubtful operation of any track section by a light vehicle including self-propelled vehicle such as motor trolley or light engine or tower wagon etc.,

indicating the occupancy/clearance of track, it is necessary that the Station Master on duty satisfies himself that the said vehicle has cleared the point zone track sections by observing the track indications of the track on either side of the crossovers by positively checking the entrance and exit track sections are showing occupancy and clearance in accordance with the train movement.

## 13 RELEASE/CANCELLATION OF ROUTE:

Normally when a train is received on or despatch from any route, the route illumination will disappear automatically after passage of the train suggesting that the route is released. When the route is not released automatically after passage of train over it or when on SM on duty intends to cancel the route set by him shall follow the procedure for cancellation of route described in Para No.5.1 of Appendix-B above. If the route is not released even after resorting to cancellation the SM on duty should inform the Signal Maintainer/JE/SSE for its rectification.

***Note:*** *UP & DN Calling on Signals are to be manually cancelled after the passage of the train to release the route. In both the cases after passage of train, cancel the signal to release the route.*

## 14 REPLACEMENT OF SIGNALS TO 'ON':

Signals are replaced to 'ON' automatically by the passage of a train beyond the signal. It will not be possible to re-clear the signal again unless the due process for clearing the signal is repeated again. For replacement of any signal to 'ON' position manually, the SM on duty shall follow the Para No.5.1 of Appendix-B.

## 15 PILOTING OF TRAINS IN TO STATION YARD:

Whenever Home signal becomes defective, trains can be admitted by taking off Calling-on signal. Whenever both Home signal and Calling-on signal failed, all trains will be piloted in vide SR. 3.69.06.

The SM on duty shall nominate a clear line and shall advise the TPM on duty at station to set the nominated route with the help of crank handle if the points cannot be set from the VDU. Then the TPM shall set the facing and trailing points and clamp and padlock the same under the supervision of SM on duty.

The SM on duty shall then hand over the written authority T/369(3b) to the TPM for piloting the train. While going towards Home signal the TPM shall check the points and satisfy himself that the route is correctly set.
After the train has brought to a dead stop at the Home signal the TPM shall hand over the pilot memo to the Loco pilot, board the engine and display proceed hand signal to pass the Home signal.

**NOTE:**
The Station Master on duty shall personally supervise the correct setting, clamping and padlocking of the facing points, if any and ensure clearance on the nominated route vide SR 3.69.03(c).
The keys of padlock of the clamps put ON to the points on the route for piloting In or piloting OUT shall be in the personally custody of the SM on duty or any other authorized

operating officials till such time the train / engine / vehicle has utilized the route or alternatively such movement is cancelled.

**16 PILOTING OF TRAINS - OUT OF STATION YARD:**

When the starter signal has become defective, train can be departed by taking 'OFF' calling on signals provided below starter signals. When both starter signal and calling on signal below it fails, the Station Master on duty shall advise the on duty TPM to set all points correctly for the outgoing trains. Then he shall clamp and padlock the same under the supervision of SM on duty. Then the SM on duty shall hand over the pilot memo T/369(3b) (along with the other authority if necessary) to the on duty TPM. The TPM on duty shall hand over the authority to the Loco pilot of the train and display proceed hand signal at the foot of the starter vide SR. [Refer SR 3.70.03].

In case the advanced starter signal has become defective, such signal shall be passed on the written authority on the form T/369(3b) on D/L and on the authority PLCT on S/L. The TPM shall hand over the pilot memo in form T/369(3b) or PLCT as the case may be, to the Loco pilot after the train stopped. [Refer SR 3.70.03].

**17 SHUNTING:**

Shunt signals at top point viz., SH7 & SH9 at MNGD end and SH10 at THV end have been provided for back shunt movement. SH12 on Banker siding, SH8 on shunting neck, SH14 on T.M. siding are provided at THV end. SH34 on shunting neck is provided at MNGD end. SH21, SH23, SH29, SH31 below starter signals at THV end and SH22, SH24, SH28, SH30, SH34 are also provided below starter signals at MNGD end. Independent SH32 on UP line at MNGD end and SH25 &SH27 at THV end of the yard for yard shunting. Independent SH17, SH18 & SH19 are provided for shunting on goods siding taken off from Line-1. Using of starter signals is prohibited for shunting purpose in this yard.

18 **VERIFICATION OF LINE CLEARANCE BY STATION MASTER ON DUTY FOR RECEPTION OF TRAIN INTO STATION YARD:**

In the Station yard, a route on the running line comprises entrance, berthing and despatch portion of the yard shall be kept clear of any obstruction for the passages of any train or for any other movements. The clearance of the route including overlap must be ensured by the SS/SM on duty personally through VDU indications and/or physical verification of track before any movement of trains are permitted on the concerned route subject to the other conditions such as locking of the point's etc.

19 **OBSERVATION OF TRACK SECTION AFTER STABLING OF TRAINS ON RUNNING LINES:**

When a train is stabled on a running line for a duration exceeding ten hours, the use of the said running line after clearance for passing the trains 'IN' 'THROUGH' or 'OUT' at the station shall be done with a lot of care and diligence. Station Master on duty shall meticulously observe the proper functioning of the relevant track sections (occupancy/clearance) while admitting a train. Such observance should continue for a minimum of four to five trains thereafter. If the Station Master on duty is not satisfied with the proper functioning of the track sections on which the train was earlier stabled, the signals leading on the line shall be suspended and the S & T maintenance staff be informed to attend.

## 20 MAINTENANCE OF S & T INSTALLATION AND ADHERENCE TO MAINTENANCE SCHEDULES:

Regular maintenance of the S&T installations, adherence to schedules of maintenance testing of points, track circuits, level crossing gates, associated interlocking apparatus cables and the interlocking functional tests is must for safe and satisfactory working of these installations at this station.

The tests, checks and replacements etc., shall confirm to the schedules of maintenance as indicated in the Signal Engineering Manual as also as per the current and extant instructions/circulars on the subject.

## 21 RECTIFICATION AND CHECK BEFORE RESUMING NORMAL WORKING:

After receipt of the failure information, the sectional Maintainer shall attend to the failure after giving a 'Disconnection Memo'. After rectification of the fault, the Sectional Maintainer shall give 'Reconnection Memo' detailing the rectification. Thereafter the Station Master on duty shall test this defective apparatus. After satisfying himself that the gear is in good and proper working order, he shall resume the normal working of the said defective apparatus in terms of SR.3.51.04 and RB letter No. 2021/SIG/21/safety performance, dtd:10.06.2023 & amendment issued vide letter No: 2023/TT-IV/9/2, dtd:16.06.2023.

## 22 PROCEDURE FOR CARRYING OUT PLANNED MAINTENANCE WORK:

Whenever any normal maintenance or special works for major renewals etc., are involved, the Signal and Telecom department should pre-plan these works. Field staff and the Inspector of the section should give to the Station master in writing 'Advance Intimation' about this work in terms of G & SR.15.08.01.

## 23 EMERGENCIES:

Notwithstanding, anything contained in the aforesaid paras when equipment is found defective and unsafe for passage of trains, the Signal and Telecom staff must at once suspend the working of the equipment and associated installations and issue 'Suspension Memo' explaining the seriousness of the defect or damage to the interlocking installation to the Station master and take the Station Master's acknowledgement. After this, the usual practice of exchange of disconnection memo and reconnection memo can follow. The Station Master must act promptly on such messages and take adequate precaution treating the S&T installation as defective and pass trains over the affected interlocking equipment's according to extant instructions as contained in GR and SR.3.77.

## 24 PROCEDURE TO BE FOLLOWED IN CASE OF FAILURE OF SIGNAL OR POINTS AND USE OF CRANK HANDLE:

1. Whenever a Signal or a Point becomes defective any movements over the Points on the running lines should be made after clamping and padlocking both the facing and trailing Points by Station Master on duty personally for all trains at the Station.

2. In case of failure of Signal or a Point and in case the Point cannot be operated from the VDU, the Crank Handle which is interlocked with the system has to be extracted and the following procedure has to be observed.
3. One common emergency Crank Handle key is provided for certain group of Motor operated Points. This is mechanically riveted to the Key of RKT. This Key along with Crank Handle can be released from the RKT by pressing the RKT Push Button provided near the RKT. In case of failure of Point Motor the SM on duty will take out the Crank Handle, set the Point manually by inserting Crank Handle in the Motor.
4. When the Crank Handle key is removed from RKT for operation of the defective Motor Operated Points, the responsibility for its safe custody rests with the SS/SM on duty till it is replaced back in RKT.
5. The failure of Motor Operated Points should be promptly reported to the concerned Signal Inspector/ESM for immediate rectification.
6. Whenever a Crank Handle key is required to be used by a Signal Official for maintenance/attending to failure, the Signal Official will give a disconnection memo to the Station Master on duty and after making necessary entries in the Crank Handle register, the Station Master on duty will obtain acknowledgement of the Signal Official in the Crank Handle Register and then handover to him the Crank Handle key for the Points concerned. All the Points will be treated as defective till the Crank Handle key is returned back to Station Master on duty.
7. Before parting with the Crank Handle either for attending failure or for Maintenance work by Signal Maintenance Officials, the Station Master on duty will ensure that the reception and departure Signals are put back to on position. The Points of all the lines should be treated as Non-interlocked and the Station Master on duty is responsible for introduction of Non-interlocked working and the trains will piloted IN and OUT duly clamping and Padlocking the Points, both in facing and trailing directions over which the train is to pass, as per GR 3.69 and 3.70 with relevant SR's. The Station Master on duty will be personally responsible for setting and locking of Points, for reception and despatch of all trains.
8. The Crank Handle Register is to be maintained in the following pro-forma by the Station Master on duty wherein the particulars of usage of the Crank Handle must be recorded:
   a. Date:
   b. Point Number which failed or required to be tested:
   c. Time failure:
   d. Disconnection memo number received from S&T Staff:
   e. Signature of SM/Signal Official to whom the Emergency Crank Handle is handed over:
   f. Time Emergency Crank Handle is sent out:
   g. Individual Point numbers, and Line number nominated for admission of despatch for which Points are set, Clamped and Padlocked:
   h. Train number to be admitted or despatched:
   i. Signature of the Station Master on duty to ensure correct setting, Clamping and Padlocking of the Points:
   j. Date and Time fault rectified.
   k. Time of Emergency Crank Handle received back by SM on duty:
   l. Signature and Designation of the Signal Official who rectified the fault:

## 25 INTERLOCKING OF SIGNALS WITH BLOCK INSTRUMENTS/BLOCK PANELS:

## 25.1 INTERLCOKING WITH HOME SIGNALS:

All the UP HOME Signals between BMCK-MNGD are Electrically interlocked with the respective Block Panel and DN Home signal between BMCK-THV is interlocked with the DLBI provided in the SM office. So that the Panel cannot be turned from 'TRAIN COMING FROM' position to 'LINE CLOSED' position of UP or DOWN direction as the case may be unless the respective Home Signals is put back to NORMAL position and the respective Block Section monitored by Axle Counter is clear of trains.

## 25.2 INTERLOCKING WITH ADVANCED STARTER SIGNALS:

The UP IB Home Signals No.49 is electrically interlocked with Block panel with SSBPAC(D) of section BMCK-THV so that this Signal cannot be taken OFF until the Block panel is in 'LINE CLEAR' position.

The DN IB Home Signal No.50 is electrically interlocked with Block panel with SSBPAC(D) of section BMCK-MNGD so that this Signal cannot be taken OFF until the Block panel is in 'LINE CLEAR' position.

The DN Advanced starter signal No. 46 is interlocked with Block panel with SSBPAC(D) of section BMCK-MNGD on 3rd line so that this Signal cannot be taken OFF until the concerned Block Panel is in' LINE CLEAR' position.

## 25.3 SUSPENSION OF LAST STOP SIGNALS:

When the Block panel for section BMCK-MNGD is suspended with its any position for whatever reason the DN IB Home Signal at KM 297.540 controlled by the respective Block panel with SSBPAC(D) must be treated as suspended and trains shall be Piloted Out. Private number and ID No. obtained from the station in advance shall be mentioned in the form T/369(3b).

When the Block Panel for section BMCK-THV is suspended with its any position for whatever reason the UP IB Home Signal at KM 313.440 controlled by the respective Block Panel must be treated as suspended and trains shall be Piloted Out. Private number and ID No. obtained from the station in advance shall be mentioned in the form T/369(3b).

When the Block panel with SSBPAC(D) for section BMCK-MNGD of 3rd line is suspended in any position for whatever reason the concerned Last Stop Signals controlled by the Block panel with SSBPAC(D) must be treated as suspended and trains shall be worked on PLCT.

## 26 NORMALISATION OF THE BLOCK SECTION AXLE COUNTER AND OF BLOCK WORKING BY RESETTING FEATURE:

1. Digital Axle Counters are provided on Up and Down Block Sections between BMCK-MNGD, BMCK-THV and on single line between BMCK-MNGD sections.

2. The occupation and clearance of the axle counter section are indicated on the VDU by 'RED' and 'GREEN' light.

3. If any Block proving Axle Counter [LVCD] section fails, the Last Stop Signal at the rear station cannot be taken 'OFF' and Block instrument at Advance Station cannot be turned to 'Line Closed' position after arrival of a train and in such case, resetting of last Vehicle Checking Device is to be resorted to in either Section.

4. No train shall be allowed on signal to leave a station in any particular direction unless:

   Block Section clear indication is available for the relevant Axle Counter section portion and Last Stop Signal is taken OFF. [Refer Para No: 6.1 of appendix 'B' for procedure of resetting of LVCD Axle counter].

## 27 WORKING OF INTEGRATED POWER SUPPLY [IPS, INDICATIONS & ACTION TO BE TAKEN BY SM ON DUTY:

a) The station works on 230V single phase power supply. The normal power supply is from the auxiliary transformer (25KVA Rating) connected to OHE traction Distribution system.
b) Standby power supply: Odisha State Electricity Board Supply.
c) An Auto changeover switch is provided in the Station Master's Office with the three power supplies viz. UP AT, DN AT and Local supply for automatic selection from available source or changing the switch position to the required supply manually. A luminous indicator provided above the circuit breaker for each supply indicates the availability of the supply.
d) Normally the switch is kept in auto mode. Whenever power block is to be given, the on duty SM must ascertain that power is available on the other AT e.g. if power block is given to the UP line, DN AT must be available and vice-versa.
e) In case of failure of one of the AT Supply without any power block, the on duty SM has to check whether the circuit breaker has tripped (Three circuit breakers are provided in the changeover switch board one for each supply and their normal position is Up and when tripped it goes down). In case of failure of both AT supplies, the Local supply shall be utilized by operating the switch. If the circuit breaker is tripping even after resetting, no attempt shall be made to hold it by any means and a message shall be given to concerned SSE [Elect.] and SSE/PSI [OHE] for prompt rectification.
f) For IPS system which provides supply to EI, a manual changeover switch is provided at SM's Office with the two power supplies viz., selected supply from CLS panel and State power supply for changing the switch to required supply position manually.
g) Normally manual changeover switch is kept in selected supply from CLS panel position, if in case any emergency, changeover switch is changed to local supply position by on duty SM.
h) There is a remote monitoring ASM box provided at the Cabin to monitor the health of IPS.

**REMOTE MONITORING ASM BOX:**

Remote monitoring ASM Box gives alarm to the ASM for the following fault conditions:-

a) 50% depth of discharge (DoD) of battery. In this condition audio/visual alarm comes, which can be acknowledged with audio cut-off.
b) 60% DOD, which warns for emergency. The alarm for this condition is same as for condition 1.

c) 70% DOD, which signals system, shut-down. In this condition signal feed is cut-off and all DC-DC converters continue working. Audio alarm continues till power supply is restored.
d) Any of the module fails, which calls for 'call S&T'.
e) Whenever there is a failure of power supply in AT or Local the SM shall take prompt action to inform to all concerned for the rectification. The SM himself, during his daily checks, shall test the availability of power supply AT and Local and make an entry in the Cabin Diary duly initiating action for rectification of failure, if any.

28. **WORKING OF AUTOMATIC FIRE DETECTION AND ALARM SYSTEM:**

a) In case of any alarm in any particular area due to fire or dust-Zone number on the LCD display can be seen, note down the zone No. displayed in control panel.
b) The moment the smoke detector detects any smoke particles, the RED LED will blink along with the alarm.
c) Once you find the zone number rush to that particular area where the detector gives alarm.
d) Once you reach the area where the detector is giving the alarm, check whether the alarm is due to the fire or for any other reason.
e) Then call immediately to the staff of concerned department.
f) Call the fire station if required.
g) Take action to extinguish the fire by the fire extinguishers available in the station.
h) To alert the people in case of emergency press "*" sign of the fire which is present inside the key pad together for few seconds. This will enable you to hear the panel alarm.
i) To reset the panel press "RESET" and **"1234"** button and then press 1.
j) The control panel will get reset and siren muted.
k) If the power fails on this will enable us to see the red indicator on the panel.
l) In case of failure in power and if the battery is fully charged, the panel can function effectively as long as the charge in the battery is present.

**29. AUTO DIALLING:**

If you hear alarm from the panel, this system will dial the telephone/mobile number you fed. The pre recorded messages will be heard on the phone. If you want to make two way communications, press "6" on your mobile. You can have this communication for 50 seconds. If you want to talk more, press again "6" before completion of 50 seconds for another 50 seconds or you can acknowledge the receipt of call by pressing "2" on SSE/Signal mobile, in case number "2" is not pressed the system will dial again the same telephone number as per the programmed dial attempt and still if acknowledgement not come from 1st number then panel will dial 2nd number till the time acknowledgement comes it will keep on dialing.

30. **SOLID STATE BLOCK PROVING BY AXLE COUNTER (DIGITAL) IS PROVIDED FOR BLOCK SECTION BETWEEN BMCK-MNGD ON DOUBLE LINE, BMCK-MNGD (3RD LINE), BMCK-THV ON DOUBLE LINE**

**DETAILES (INCLUDING OPERATION) ARE ELABORATED BELOW IN PARA: 31 (FOR SINGLE LINE) & PARA: 32 (FOR DOUBLE LINE)**:

Common rules of Solid State Block Proving by Axle Counter (Digital) for Single line & double line given in Sl. No. A to D.

**A) PRINCIPLE OF WORKING**

A.1 The trains are worked on the Absolute Block system.
A.2 The block section is provided with an axle counter to verify the occupation or clearance of block section and indicated on Block Panel.
A.3 It is not possible to take the Last Stop Signal to 'OFF' unless LINE CLEAR has been obtained from station in advance.
A.4 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.
A.5 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.
A.6 Block section show automatically Train on Line on panel when train enters into the block section on line clear.
A.7 Train entry/exit buzzer to/ from block section are provided at both stations and to be acknowledged.
A.8 Block section automatically closes on complete arrival of train at the receiving station.
A.9 A control to prevent the station in rear to take LINE CLEAR on its Block Panel without taking consent of receiving station.
A.10 A control to cancel the LINE CLEAR, already taken by station in rear.
A.11 It is possible to close the block section only, if no train has entered the Block Section for at least 120 seconds after application of cancellation as per clause A.10 above with a co-operation from station in rear.
A.12 A control to permit Shunting in Block Section. **[This item is only for single line]**

**B) KNOWLEDGE OF RULES**

Every Railway servant authorised to operate the **SSBPAC(D) both Single line and Double line** should be conversant with rules related to block working, whether supplied or not with copy of rules or translation of rules relating to its duties.

**C) ACCESS TO & OPERATION OF BLOCK PANEL**

No unauthorised person shall be permitted to operate the Block Panel, communication equipment, its associated signals and equipment.

**D) RESTRICTED ENTRY TO BLOCK/SIGNAL CABIN**

No unauthorised person (whether Railway servant or otherwise) shall be permitted to enter the Block /Signal cabin except when required to do so in connection with regular duties.

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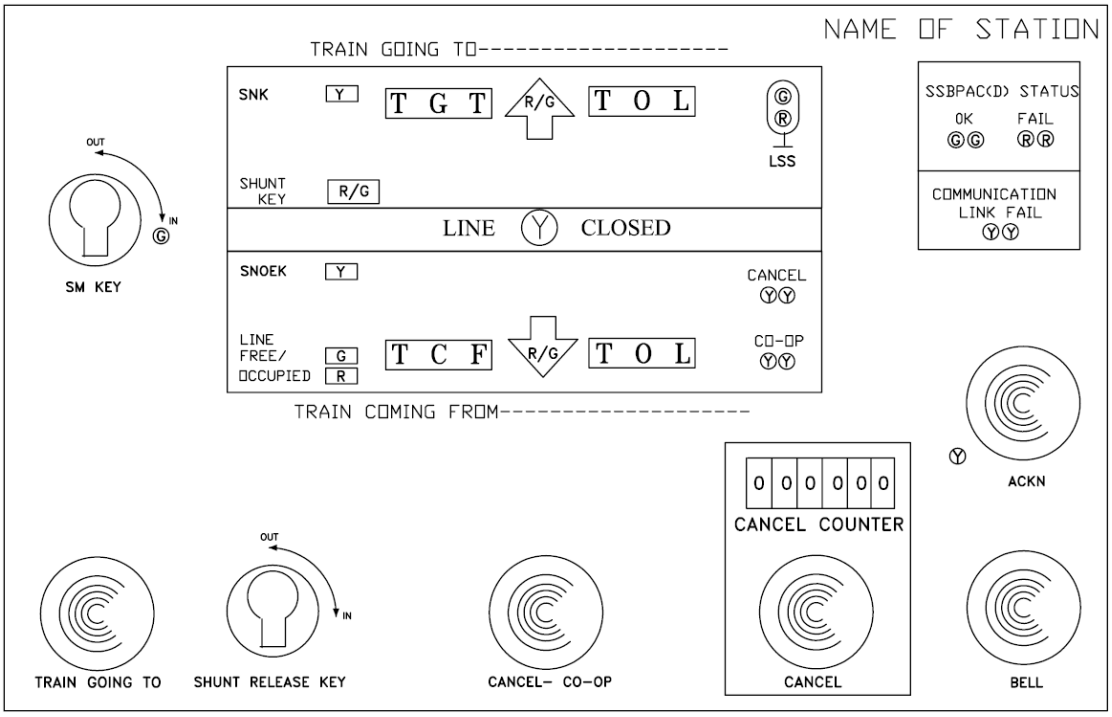
## 31. BLOCK WORKING PROCEDURE OF SSBPAC(D) FOR SINGLE LINE:

### 1.0 INTRODUCTION

The **Solid State Block Proving by Axle Counter (Digital)** will work based on the principles of Single and double line of Absolute Block system to control the movement of trains on **Single Line** block section from one block station to another in a fixed direction. These working instructions should be read in conjunction with General Rules (GR) of 1976 and its amendment in 2012. These working instructions do not supersede any rule laid down in GR.

### 2.0 FRONT VIEW OF BLOCK PANEL WITH SSBPAC (D) [SINGLE LINE]




### 3.0 DESCRIPTION OF BLOCK PANEL OF SSBPAC (D):

### 3.1 SM's Block Panel is provided with following *KEYS* for following functions:

3.1.1 **SM key** SM's control key.
To ensure only authorized person can operate.
The key when out prevent following operations:

a) Transmission of BELL code
b) Transmission of IS LINE CLEAR inquiry request
c) Cancellation of LINE CLEAR

**Buttons & Keys on block Panel.**

a) The block panel for Single line consists of 5 buttons and two keys. it has shunt EKT.
b) The block Panel for Double line consists of Six buttons and two keys.

| | | |
|---|---|---|
| 3.1.2 | **Shunt release key (SHK)** | Shunt Release Key (normally turned and kept in OUT).<br>a) The following operation is possible when IN:-<br>To take out SHUNT KEY from electric key transmitter (EKT), which serves as tangible authority for Driver to shunt beyond Last Stop Signal up to First Stop Signal.<br><br>b) The following operations are not possible when IN:<br>(i) Block Line Clear.<br>(ii) Other end station from taking LINE CLEAR.<br>(iii) Closing of block. |
| 3.1.3 | **SM's Back Cover lock Key** | To open or lock the back cover by SM, when required by signal staff for maintenance or repairs. |
| 3.1.4 | **Maintainer's Back cover lock key** | To open or lock the back cover by authorised signal staff, for maintenance or repairs, provided SM's back cover lock key as per 7.1.3 or Appendix 'B'/Manual is also applied. |

**3.2 <u>SM's BLOCK PANEL IS PROVIDED WITH NON LOCKING PUSH BUTTONS</u>:**

| | | |
|---|---|---|
| 3.2.1 | **BELL button (Black in colour)** | To transmit BELL code to station at other end of block section.<br>To take LINE CLEAR, when pressed along with TRAIN GOING TO button.<br>To cancel LINE CLEAR, when pressed along with CANCEL button. |
| 3.2.2 | **TRAIN GOING TO Button (Red in colour)** | For applying line Clear. It is used in conjunction with BELL button at train sending station to light up TRAIN COMING FROM (GREEN) indication on Block Panel of other end station, which in turn automatically grants LINE CLEAR to light up and TRAIN GOING TO (GREEN) indication on Block Panel of former. |
| 3.2.3 | **ACKN button (Black in Colour)** | A button is provided for acknowledgement of operation.<br>To suppress the SECTION buzzer on occupation or clearance of block section. |
| 3.2.4 | **Cancel Co-op Button (Green in colour)** | To give co-operation from sending station to cancel the line clear at receiving station. |
| 3.2.5 | **CANCEL Button (Yellow in colour)** | To Cancel Line Clear<br>It is used in conjunction with BELL button at train receiving Station under following conditions:<br>a) Train has not entered the block section and Line clear cancellation has to be done.<br>b) Complete train has been pushed back at train sending station. |

**3.3 SM's Block Panel is provided with *ILLUMINATED INDICATORS:***

| | | |
|---|---|---|
| 3.3.1 | **LINE CLOSED Indication** | Circular indication in between the directional arrowhead.<br>Mentioned in 7.3.2 & 7.3.3. |
| | **YELLOW** | To indicate Block Section free from vehicles and LINE CLEAR not granted /received at train receiving / train sending station respectively. |
| 3.3.2 | **TRAIN COMING FROM Indication** | In a directional arrowhead pointing downward for incoming traffic towards station. |
| | **GREEN** | To indicate LINE CLEAR granted, when TRAIN GOING TO Button and BELL button have been pressed at sending station and the conditions for the granting of LINE CLEAR at receiving station have been complied with and a rectangular indication named TCF lights up GREEN. |
| | **RED** | To indicate TRAIN ON LINE on entry of incoming train on lINECLEAR and a rectangular indication named TOL lights up RED. |
| | **FLASHING GREEN** | To indicate:<br>a) Block section clear after arrival of train, but associated Signals and their controls not normal at either station.<br>b) Cancellation of LINE CLEAR before entry of train in Block Section.<br>c) Block section clear after arrival of train, associated signals and their controls at normal at both stations but after unintentional insertion of Shunt Release Key IN when the train was in section. |
| 3.3.3 | **TRAIN GOING TO Indication** | In a directional arrowhead pointing upward for outgoing traffic away from station at train sending station. |
| | **GREEN** | To indicate LINE CLEAR received when TRAIN GOING TO button and BELL button have been pressed on Block Panel of train sending station and the condition for taking the LINE CLEAR have been complied with at both stations and a rectangular indication named TGT lights up GREEN. |
| | **RED** | To indicate TRAIN ON LINE on entry of outgoing train on LINE CLEAR and a rectangular indication named TOL lights up RED. |
| | **FLASHING GREEN** | To indicate:<br>a) Block Section clear after arrival of train at other station, but associated signals and their controls not normal at either or both stations i.e. SNK off or Shunt key indication ‘RED’.<br>b) LINE CLEAR cancelled before entry of train in block section. |
| 3.3.4 | **Cancel CO-OP indication**<br>**YELLOW** | Indication to indicate co-operation extended by station at other end for cancellation of line clear by pressing Cancel Cooperation button. |

| | | |
|---|---|---|
| 3.3.5 | **CANCEL indication** | Circular LED. |
| | **FLASHING YELLOW** | To indicate progress of LINE CLEAR cancellation timer of 120 seconds. The indication lights up on pressing of CANCEL along with BELL button, when TRAIN COMING FROM is displaying FLASHING GREEN indication. |
| 3.3.6 | **SNK Indications** | One such indication is provided. |
| | **SNK YELLOW** | i) Provided near TRAIN GOING TO directional arrowhead to Indicate LAST STOP SIGNAL, Reception signal(s) and their controls at ON/ Normal. |
| 3.3.7 | **SNOEK (SNK other end) YELLOW** | i) Provided near TRAIN COMING FROM directional arrowhead to Indicate the following:<br>* LAST STOP SIGNAL and its controls at station at other end are at ON/ Normal.<br>* Shunt Key of EKT at other end station is 'IN'. |
| 3.3.8 | **Last Stop Signal (LSS) Indications** | Circular in monogram of signal. |
| | **RED** | To indicate Last Stop Signal is at 'ON'. |
| | **GREEN** | To indicate Last Stop Signal is at 'OFF'. |
| 3.3.9 | **LINE FREE indication** | |
| | **GREEN** | To indicate Block Section is clear of vehicles. |
| | **LINE OCUUPIED indication** | To indicate Block Section occupied. |
| | **RED** | |
| 3.3.10 | **ACKN indication** | A Indication near ACKN button. |
| | **YELLOW** | To indicate SECTION buzzer ON status. |
| 3.3.11 | **SM KEY `IN' indication** | Indication near SM KEY. |
| | **GREEN** | To indicate SM key "IN'. |
| 3.3.12 | **SHUNT KEY indication** | GREEN -To indicate SHUNT KEY OF EKT IS "IN" .<br>RED- To indicate SHUNT KEY OF EKT IS "OUT". |
| 3.3.13 | **SSBPAC OK indication** | Glows GREEN when SSBPAC (D) is working correctly otherwise Extinguished. |
| 3.3.14 | **SSBPAC FAIL indication** | Glows RED when SSBPAC (D) goes into a failure mode otherwise Extinguished. |

3.3.15 **Communication LINK FAIL indication** Glows steady YELLOW when LINK FAILS otherwise Flashing yellow when link is OK.

### 3.4 SM's BLOCK PANEL IS PROVIDED WITH BUZZERS:

3.4.1 **BLOCK Buzzer** To register the BELL CODE sent by other end SM.

3.4.2 **SECTION Buzzer** To register the occupation & clearance of each Block Section.

### 3.5 CANCEL COUNTER:

To register the cancellation of Line Clear. It is incremented by one for every cancellation operation done which is a non-resettable type. Cancellation to be done by receiving station. Co-op. by sending station.

### 3.6 BLOCK TELEPHONE:

Block telephone is provided at both stations of the block Section of BMCK-MNGD & BMCK-THV on double line and BMCK-MNGD on 3rd line working.

### 3.7 SHUNT KEY OF EKT:

3.7.1 An auxiliary EKT is provided with SM's Block Panel to serve as SHUNTING Authority.

3.7.2 The Key of this transmitter is Normally `IN' and taken 'OUT' to use as tangible authority given to Driver of a train to perform shunting upto opposing First Stop Signal (FSS).

3.7.3 Released when SHUNT RELEASE KEY of Block Panel is turned to `IN'.

## 4.0 OPERATION OF BLOCK PANEL:

### 4.1 Method of Signaling Trains from Block Station to Block Station in a Single Line section

a) SM of the station intending to send a train from his station has to obtain the permission of the controller. He shall obtain permission through reception of a PN from station at other end before taking LINE CLEAR on its Block Panel.

b) Before a request for IS LINE CLEAR is sent to station at other end, SM shall ensure the following on its Block Panel;

   i) LINE CLOSED indication YELLOW &
   ii) LINE FREE indication GREEN &
   iii) SNK indication YELLOW &
   iv) SNOEK indication YELLOW &
   v) SHUNT KEY indication GREEN
   vi) SM's KEY indication GREEN

c) The station at other end while granting his consent shall ensure the following on its Block Panel;

   i) LINE CLOSED indication YELLOW &

ii) LINE FREE indication GREEN &
iii) SNK indication YELLOW &
iv) SNOEK indication YELLOW &
v) SHUNT KEY indication GREEN
vi) SM's KEY indication GREEN

d) Thereafter SM of sending station press BELL & TRAIN GOING TO buttons.

e) The directional arrow head TRAIN GOING TO/ TRAIN COMING FROM lights up green at sending/receiving station respectively.

f) SM of sending station releases BELL & TRAIN GOING TO buttons on getting TRAIN GOING TO green indication.

g) The sending station SM, after obtaining LINE CLEAR on its Block Panel, can send a train into Block Section by taking the LSS to `OFF'. On entry of train into section, TRAIN ON LINE lights up at both the stations near arrowhead indication. The TRAIN GOING TO / TRAIN COMING FROM Arrow Head Indications turns RED in respective stations. SECTION buzzer sounds at both the stations along with ACKN indicator near ACKN button. Pressing of ACKN will turn off the buzzer and ACKN indicator.

h) The train is received at receiving station on proper reception signals. On complete arrival of train, TRAIN COMING FROM indicator changes to FLASHING 'GREEN' & LINE FREE indicator turns to GREEN at both the stations. TRAIN GOING TO /TRAIN COMING FROM indicator continues FLASHING GREEN at sending / receiving station respectively if reception & departure signals and their controls are not at normal or SHUNT KEY of EKT is `OUT'. In case reception & departure signals and their controls are at normal & SHUNT KEY of EKT is `IN' at sending/ receiving station, TRAIN GOING TO/ TRAIN COMING FROM turns off and LINE CLOSED indicator lights up YELLOW.

**4.2 <u>FOLLOWING IS THE SEQUENCE OF OPERATIONS OF SIGNALLING A TRAIN BETWEEN TWO STATIONS</u>:**

The block section being clear and the 'LINE CLOSED' indication being displayed on Block Panel at both the stations. The action is taken by sending stations SM as under:

| | **Sending Station** | | **Receiving Station** |
|---|---|---|---|
| 1. | SM ensures<br>LINE CLOSED indication YELLOW, SNK indication YELLOW,<br>SNOEK indication YELLOW,<br>LINE FREE indication GREEN,<br>SHUNT KEY indication GREEN,<br>SM KEY indication GREEN. | 2. | Ensure SM KEY indication GREEN<br><br>SM acknowledges the 'Call Attention' signal by pressing BELL button. |
| | SM sends 'Call Attention' signal to receiving station by pressing BELL button and hold on block telephone. | | Attend telephone |
| 3. | Ask "IS LINE CLEAR FOR ….. TRAIN" | 4. | LINE CLOSED indication YELLOW,<br>SNK indication YELLOW,<br>SNOEK indication YELLOW,<br>LINE FREE indication GREEN &<br>SHUNT KEY indication GREEN &<br>Then say "LINE IS CLEAR FOR ….. TRAIN" supported by a PN. |

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| | | | |
|---|---|---|---|
| 5. | SM simultaneously presses BELL & TRAIN GOING TO buttons until 'TRAIN GOING TO' arrowhead indication lights up GREEN.<br>(If aforesaid indicator does not appear after 3 seconds (approx.) of pressing the buttons, SM releases the buttons and rechecks conditions at his station and asks station at other end to recheck the conditions for grant of LINE CLEAR.) | 6. | 'LINE CLOSED' indicator turns off and 'TRAIN COMING FROM' arrowhead indication lights up GREEN. |
| 7. | 'LINE CLOSED' indicator turns off.<br>'TRAIN GOING TO' arrowhead indication lights up GREEN.<br>Releases BELL & TRAIN GOING TO buttons. | | |
| 8. | Takes OFF `LSS'.<br>Train enters the Block Section.<br>LSS indication on block panel turns to RED.<br>LINE FREE indicator turns to RED.<br>SECTION buzzer starts ringing & 'TRAIN GOING TO' arrowhead indication turns RED. ACKN indicator lights up.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN indicator turns off & buzzer is silenced.<br><br>Puts back the LSS controls to Normal.<br><br>Ensures SNK lights up YELLOW. | 9. | LINE FREE indicator turns to RED.<br><br>SECTION buzzer starts ringing & 'TRAIN COMING FROM' arrowhead indication turns RED. ACKN indicator lights up.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN indicator turns off & buzzer is silenced.<br><br>SNOEK lights up YELLOW<br><br>Takes reception signal `OFF' to receive the train.<br><br>Train passes Home Signal.<br>Home Signal replaces to `ON'.<br>Train clears the Block Section. |
| 11 | SECTION buzzer starts ringing. ACKN indicator lights up.<br>LINE FREE indicator turns to GREEN.<br>`TRAIN GOING TO' arrowhead indication turns to FLASHING GREEN.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN indicator turns off & buzzer is silenced. | 10 | SECTION buzzer starts ringing.<br>ACKN indicator light up &<br>LINE FREE indicator turns to GREEN.<br>'TRAIN COMING FROM' arrowhead indication turns to FLASHING GREEN.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN indicator turns off & buzzer is silenced. |
| 13 | SNK lights up yellow. | 12 | Replaces all controls pertaining to reception of train to Normal. |

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|---|---|---|---|
| | | | SNOEK lights up YELLOW. |
| | 'TRAIN GOING TO' arrowhead indication turns off. | | `TRAIN COMING FROM' arrowhead FLASHIN GREEN indication turns off. |
| | 'LINE CLOSED' indicator lights up. | | 'LINE CLOSED' Indicator YELLOW lights up. |

**4.3 REFUSAL OF LINE CLEAR INQUIRY:**

When a block section is blocked by the presence of a train in the section or train parting or shunting or opening of level crossing in mid-section or for any other reason, the SHUNT key of EKT shall be taken out and kept in safe custody.

If the block station SM refusing LC for a train shall communicate a PN 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 station at other end and accepted.

On removal of obstruction, the Shunt Key of EKT shall be inserted and turned to IN position and the Shunt Release Key should be taken OUT.SM shall immediately inform SM of other end about the fact, so as to enable him to send a fresh IS LINE CLEAR signal.

**4.4 CANCELLATION OF LINE CLEAR:**

In a single line, if LINE CLEAR has been cancelled, no train shall be allowed to leave in the opposite direction until a message has been received acknowledging such cancellation and stating that the train for which the LC has been obtained is detained. In case another train is to be despatched from the same direction fresh LINE CLEAR shall be obtained.

After a sending station has taken LINE CLEAR, in case of cancellation of train, the receiving station can carry out LINE CLEAR cancellation by pressing BELL & CANCEL button with SM key IN with SHUNT key OUT only when the CO-OP button at the sending station is pressed. TRAIN GOING TO / TRAIN COMING FROM arrow indications turns to FLASHING GREEN at sending/ receiving station respectively.

**a) Method of Line Clear Cancellation due to cancellation of train or for Testing**

| **SENDING STATION** | | **RECEIVING STATION** | |
|---|---|---|---|
| 1. | Puts back LSS to `ON', if already taken `OFF, ensures;<br>SNK indicator YELLOW,<br>SHUNT KEY indicator at GREEN<br>SM KEY indicator GREEN<br><br>Advises receiving end station SM about cancellation on telephone duly communicating a PN after prescribed BELL code. | 2. | Agrees to request, communicates a PN and ensures;<br>SNK indicator YELLOW,<br>SNOEK indicator YELLOW,<br>SHUNT KEY indicator GREEN<br>SM KEY indicator GREE |
| 3. | Ensures SNOEK indicator YELLOW<br><br>Presses CANCEL CO-OP button and releases on receipt of BELL code | 4. | <br><br>CO-OP to light up YELLOW<br>Presses BELL & CANCEL button with SM key IN & SHUNT key in 'OUT'<br>CANCEL COUNTER increments by 1 |

| | | | |
|---|---|---|---|
| | | | 'TRAIN COMING FROM' indicator turns to FLASHING GREEN<br><br>CANCEL indicator lights up FLASHING YELLOW & continues flashing for 120 seconds |
| 5. | 'TRAIN GOING TO' indicator turns FLASHING GREEN | 6. | On expiry of 120 seconds,<br>TRAIN COMING FROM flashing indicator and CANCEL flashing indicator turns off<br><br>'LINE CLOSED' indicator lights up |
| 7. | TRAIN GOING TO indicator turns off<br><br>LINE CLOSED indicator lights up | | |

**4.5 <u>CLOSING OF BLOCK PANEL AFTER A PUSH BACK OPERATION</u>:**

After a train has been pushed back at the sending station, the sending station advises the receiving station. The receiving station can close the section by pressing BELL and CANCEL button after getting cooperation from the other end station.

**4.6 <u>METHOD OF PUSH BACK OPERATION</u>:**

| **SENDING STATION** | | **RECEIVING STATION** | |
|---|---|---|---|
| 1. | Train clears the Block Section. LINE FREE indicator turns GREEN. SECTION buzzer starts ringing. ACKN indicator lights up.<br><br>'TRAIN GOING TO' arrowhead indication turns to FLASHING GREEN.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN indicator turns off. | 2. | Train clears the Block Section. LINE FREE indicator turns GREEN. SECTION buzzer starts ringing. ACKN indicator lights up.<br><br>'TRAIN COMING FROM' arrowhead indication turns to FLASHING GREEN.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN indicator turns off. |
| 3. | Advises receiving end station SM about cancellation duly communicating a PN on telephone after prescribed BELL code. | 4. | Agrees to request, ensures<br>SNK indicator YELLOW,<br>SNOEK indicator YELLOW,<br>SHUNT KEY indicator GREEN and<br>Gives consent on telephone after prescribed BELL code. |
| 5. | After verbal consent from other end SM<br>Ensure SNK indication YELLOW,<br>SNOEK indication YELLOW,<br>SHUNT KEY indication GREEN<br><br>Presses CANCEL CO-OP button and releases on receipt of BELL code. | 6. | CO-OP to light up YELLOW.<br>Presses BELL & CANCEL button with SM key IN.<br>CANCEL COUNTER increments. |

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| | | | CANCEL indication lights up FLASHING YELLOW & continues flashing for 120 seconds. |
| 8. | TRAIN GOING TO arrowhead indication turns off.<br>LINE CLOSED indication lights up. | 7. | On expiry of 120 seconds,<br>TRAIN COMING FROM arrowhead indication and CANCEL indication turns off.<br>'LINE CLOSED' indication lights up. |

## 4.7 SHUNTING:

### 4.7.1 Shunting beyond LSS and upto FSS:

Loco pilot shall be handed over shunt key which is the authority for shunting. Necessary signals for shunting shall be taken off for normal movement or reverse push back movement.

If shunt key cannot be extracted at the station where shunting is performed, the station in advance shall be asked to take off the shunt key and communicate his PN. On reception of PN from station in advance, the loco pilot shall be given authority T.806

### 4.7.2 Shunting beyond FSS:

For shunting beyond FSS, the movement shall be treated as a train movement, LC shall be obtained and departure signals whenever free shall be taken OFF. Loco Pilot shall be advised through a written memo to push back duly observing reception signals on being taken OFF.

**a) Method of Shunting**

| SENDING STATION | | RECEIVING STATION | |
|---|---|---|---|
| 1. | SM ensures<br>LINE CLOSED indication YELLOW, SNK indication YELLOW,<br>SNOEK indication YELLOW,<br>LINE FREE indication GREEN,<br>SHUNT KEY indication GREEN,<br>SM KEY indication GREEN. | 2. | Acknowledge and attend Block Telephone. |
| | Gives call attention and hold on Block Telephone. | | |
| 3. | Intimate about the intended shunt movement beyond FSS ask Line Clear for Train No. _____ | 4. | Ensure block panel displays<br>LINE CLOSED indication YELLOW, SNK indication YELLOW,<br>SNOEK indication YELLOW,<br>LINE FREE indication GREEN,<br>SHUNT KEY indication GREEN,<br>Grant Line Clear duly communicating a PN. |
| 5. | Press "Bell" & "Train Going To" buttons until "TRAIN GOING TO" arrow head indication lights up GREEN. Then release the buttons. | 6. | "LINE CLOSED" indication turns off and "TRAIN COMING FROM" arrow head indication lights up. |
| 7. | Take OFF LSS.<br>Train enters Block Section and LSS is replaced to 'ON'.<br>LINE FREE indicator turns to RED.<br>Section Buzzer starts ringing. | 8. | LINE FREE indicator turns RED.<br>Section Buzzer starts ringing.<br>TRAIN COMING FROM arrow head indication turns RED.<br>ACKN indicator lights up. |

| | | | |
|---|---|---|---|
| | TRAIN GOING TO arrow head indication turns RED.<br>ACKN indication lights up.<br>Acknowledge the buzzer by pressing ACKN button. ACKN indicator turns OFF. Put back LSS controls to normal. | | Acknowledge the buzzer by pressing ACKN button.<br>ACKN indicator turns off.<br>SNOEK lights up YELLOW. |
| 9. | Take OFF reception signals.<br>Train clears block section. Line free indicator turns GREEN.<br>Section Buzzer starts ringing.<br>ACKN indication lights up.<br>TRAIN GOING TO arrow head indication turns to flashing GREEN.<br>Acknowledge the buzzer by pressing ACKN button. ACKN indicator turns OFF. | 10 | Train clears block section. Line free indicator turns GREEN.<br>Section Buzzer starts ringing.<br>ACKN indication lights up.<br>TRAIN COMING FROM arrow head indication turns to flashing GREEN.<br>Acknowledge the buzzer by pressing ACKN button. ACKN indicator turns OFF. |
| 11. | Advises receiving end SM about completion of shunting and clearance of block section duly communicating a PN with prescribed BELL code. | 12 | Record the particulars and acknowledge with prescribed bell code. |
| 13. | Ensure<br>SNK indication YELLOW,<br>SNOEK indication YELLOW,<br>SHUNT KEY indication GREEN.<br>Press CANCEL CO-OP button and release on receipt of bell code. | 14 | CO-OP lights up YELLOW.<br>Press BELL & CANCEL button.<br>CANCEL COUNTER registers next progressive number.<br>CANCEL indication lights up FLASHING YELLOW and continues for 120 seconds. |
| 16. | TRAIN GOING TO arrowhead indication turns off.<br>LINE CLOSED indication lights up. | 15 | On expiry of 120 seconds<br>TRAIN COMING FROM arrow head indication & CANCEL indication turns OFF.<br>LINE CLOSED indication lights up. |

## 5.0 BLOCK FAILURES & ACTIONS TO BE TAKEN:

The block failures can be categorized into the following:

### 5.1 FAILURE OF BLOCK PANEL:

Block panel should be considered to be defective and should not be restored to 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 (OK indication) again block panel operation can be restored.

| | TYPE OF FAILURE | ACTION TO BE TAKEN |
|---|---|---|
| 1. | When no indication of any sort, at all appears on the block panel<br>or | For case 1-11, Block Panel should be treated as defective block working suspended & trains should be dealt with by taking LINE CLEAR on the electrical communication equipment provided and by provisions of GR 14.13 & GR 14.2.5 & SRs there under, |
| 2. | When the Bell Code signals are received indistinctly<br>or | |
| 3. | Any damage is seen or reported to block equipment<br>or | |
| 4. | When no train has entered into the block section but the 'LINE FREE/OCCUPIED' indicator changes to RED and this indication persists even after Resetting of Axle counter has been tried<br>or | |
| 5. | When 'TRAIN GOING TO' or 'TRAIN COMING FROM' arrowhead indications does not appear by appropriate action though condition for asking 'LINE CLEAR' and granting permission to approach are available and LINE CLOSED `YELLOW' is maintained<br>or | |
| 6. | When a train arrives at the receiving station or pushes back to sending station, but Block Panel still shows 'TRAIN COMING FROM & TRAIN GOING TO' RED arrowhead indication<br>or | |
| 7. | TRAIN GOING TO or TRAIN COMING FROM arrowhead indication does not turn to RED to give TRAIN ON LINE on the entry of train into Block Section at either of the stations<br>or | |
| 8. | When a train has arrived at the receiving station but the Block Panel shows FLASHING GREEN indication even after ensuring SNK, SNOEK & SHUNT key indicator GREEN<br>or | |
| 9. | When, after a Line Clear cancellation, CANCEL indicator does not light up FLASHING YELLOW or lights up steady YELLOW after appropriate actions<br>or | |
| 10. | When UFSBI/Mux Fail indication appears. | |
| 11. | When Communication Link Fail indication becomes steady yellow. | |

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| 12. | When LSS cannot be kept at 'ON' during its suspension /disconnection.<br>or | In addition to action taken for case 1-11, all efforts should be made to keep the LSS at ON position. If it is not possible, then a competent railway servant should be deputed with RED hand signal at the foot of the LSS to warn the drivers of approaching trains. |
| 13. | When LSS of the station does not go back to 'ON' position on the entry of a train into the Block Section | In addition, all trains in the relevant direction should be stopped at Home signal and after ensuring that they have come to a stop, the Home signal should be cleared to caution aspect only. |
| | | To despatch a train, STARTER signal should not be taken OFF until issue of relevant authority to pass LSS & Caution order should also be issued to the driver about the defect of LSS. |
| 14. | Total failure of communication during which train shall be worked as per extent rules in force on the Railway | Trains shall be dealt as per SR 6.02.4 of G&SR |

## 5.2 Failure Of LSS & Action To Be Taken

| | **Cause of failure of the LSS** | **Action to be taken** |
|---|---|---|
| 1 | When LSS cannot be taken OFF even though LINE CLEAR has been obtained; or; | The LSS should be considered to have failed & failure shall be informed to Signal staff immediately. The LINE CLEAR shall be obtained on the BLOCK PANEL & Line Clear ticket/Paper line clear as prevalent on railway shall be issued to driver of train |
| 2 | When it can be cleared without obtaining LINE CLEAR; or; | The LSS should be considered to have failed & failure shall be informed to Signal staff immediately and follow Cl. 9.1. 13 - 9.1.14 |
| 3 | It does not restore to ON position on entry of train into Block Section | |

## 5.3 Suspension of Block Working & Action to Be Taken

| | **Cause of Suspension** | **Action to be taken** |
|---|---|---|
| 1 | When material lorry, Rail-cum-Road vehicle, Motor trolley, Tie-tamping machines, Rail Motor/Bus or Tower wagon (4 wheeler) has to run in the section. | BLOCK PANEL shall be suspended. These vehicles shall be worked on PAPER LINE CLEAR. |
| 2 | An accident takes place in the mid section. | BLOCK PANEL shall be suspended, if any line adjacent to line controlled by it is reported to be infringing, till the infringement exists.<br><br>LSS shall be treated as INOPERATIVE & FAILED. |

| | | |
|---|---|---|
| 3 | When any part of Block Panel is opened or removed for repairs under duly accepted disconnection notice. | BLOCK PANEL shall be suspended.<br><br>LSS shall be treated as INOPERATIVE & FAILED. |
| 4 | When LSS of the station has been taken by Signal staff for repairs. | LSS shall be treated as INOPERATIVE & FAILED. |
| 5 | During Block FORWARD. | LSS shall be treated as INOPERATIVE & FAILED. |

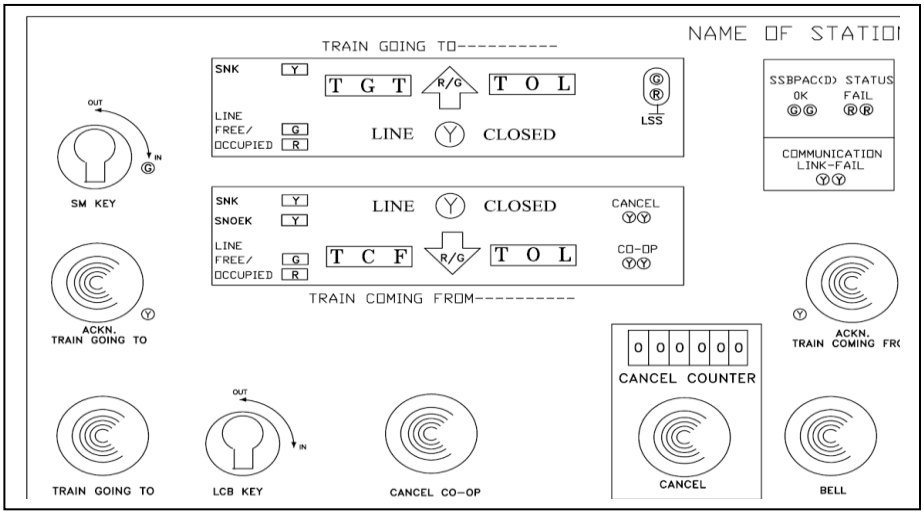
When the cause of suspension of BLOCK PANEL and/or LSS is removed, SM shall restore the normal working of BLOCK PANEL / LSS, as the case may be.

## 32. BLOCK WORKING PROCEDURE OF SSBPAC (D) DOUBLE LINE:

### 1.0 INTRODUCTION:

The **Solid State Block Proving by Axle Counter (Digital)** will work in Absolute Block system to control the movement of trains on **Double Line** block section from one block station to another on both directions. These working instructions should be read in conjunction with General Rules (GR) of 2012 and its amendment and SR's there in. These working instructions do not supersede any rule laid down in G&SR.

### 2.0 FRONT VIEW OF BLOCK PANEL WITH SSBPAC (D) FOR DOUBLE LINE:




### 3.0 DESCRIPTION OF BLOCK PANEL OF SSBPAC (D):

### 3.1 SM's Block Panel is provided with following *KEYS* for following functions

3.1.1 **SM key** — SM/ASM's control key.
The key when out prevent following operations:
a) Transmission of BELL code
b) Transmission of IS LINE CLEAR inquiry request
c) Cancellation of LINE CLEAR

3.1.2 **LCB key** — LINE CLEAR BLOCKING key.
It serves the following, when out,
To prevent station in rear to take LINE CLEAR.
To prevent closing of Block

3.1.3 **SM's Back Cover** — To open or lock the back cover by SM/ASM/Switchman, when

| | | |
|---|---|---|
| | **lock Key** | required by signal staff for maintenance or repairs. |
| 3.1.4 | **Maintainer Back cover lock key** | To open or lock the back cover by authorised signal staff, for maintenance or repairs, provided SM's back cover lock key as per cl.7.1.3 is also applied. |

**3.2 <u>SM's BLOCK PANEL IS PROVIDED WITH NON LOCKING PUSH BUTTONS</u>:**

| | | |
|---|---|---|
| 3.2.1 | **BELL button (Black in colour)** | a) To transmit BELL codes to station at other end of Block section.<br>b) To take LINE CLEAR, when pressed along with TRAIN GOING TO button.<br>To cancel LINE CLEAR, when pressed along with CANCEL button. |
| 3.2.2 | **TRAIN GOING TO Button (Red in colour)** | To transmit IS LINE CLEAR inquiry to station in advance for taking LINE CLEAR. It is used in conjunction with BELL button 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 and TRAIN GOING TO (GREEN) indication on Block Panel of sending station. |
| 3.2.3 | **ACKN button(s) (Black in Colour)** | Two such buttons are provided, one each for despatch line and receive line.<br>To silence the SECTION buzzer on occupation or clearance of block section. |
| 3.2.4 | **Cancel Co-op Button (Green in colour)** | To give co-operation from sending station to cancel the line clear at receiving station. |
| 3.2.5 | **CANCEL Button (Yellow in colour)** | It is used in conjunction with BELL button at train receiving. Station under following conditions:<br>a) Train has not entered the block section and Line clear cancellation has to be done.<br>b) Complete train has been pushed back at train sending station. |

**3.3 <u>SM's BLOCK PANEL IS PROVIDED WITH ILLUMINATED INDICATORS</u>:**

| | | |
|---|---|---|
| 3.3.1 | **LINE CLOSED Indication** | Circular indications (Two Numbers) in between the directional arrowhead. |
| | **YELLOW** | To indicate Block Section free from vehicles and LINE CLEAR not granted /received at train receiving / train sending station respectively. |
| 3.3.2 | **TRAIN COMING FROM Indication** | In a directional arrowhead pointing downward for incoming traffic towards station at train receiving station. |
| | **GREEN** | To indicate LINE CLEAR granted, when TRAIN GOING TO Button and BELL button have been pressed at sending station and the conditions for the granting of LINE CLEAR at receiving station have been complied with and a rectangular indication named TCF lights up GREEN. |
| | **RED** | To indicate TRAIN ON LINE on entry of incoming train on LINE CLEAR. |

| | | |
|---|---|---|
| | **FLASHING GREEN** | To indicate:<br>a) Block section clear after arrival of train, but associated Signals and their controls not normal at either of station or LCB Key is OUT.<br>b) Cancellation of LINE CLEAR before entry of train in Block Section. |
| 3.3.3 | **TRAIN GOING TO Indication** | In an arrowhead pointing upward for outgoing traffic away from station at train sending station. |
| | **GREEN** | To indicate LINE CLEAR received when TRAIN GOING TO button and BELL button have been pressed on Block Panel of train sending station and the condition for taking the LINE CLEAR have been complied with at both stations and a rectangular indication named TCF lights up GREEN. |
| | **RED** | To indicate TRAIN ON LINE on entry of outgoing train on LINE CLEAR. |
| | **FLASHING GREEN** | To indicate:<br>a) Block Section clear after arrival of train at other station, but associated signals and their controls not normal at either or both stations or LCB Key is OUT at receiving station.<br>b) LINE CLEAR cancelled before entry of train in block section. |
| 3.3.4 | **Cancel CO-OP indication**<br>**YELLOW** | Indication to indicate co-operation extended by station at other end for cancellation of line clear by pressing Cancel Cooperation button. |
| 3.3.5 | **CANCEL indication** | Circular LED. |
| | **FLASHING YELLOW** | To indicate progress of LINE CLEAR cancellation timer of 120 seconds. The indication lights up on pressing of CANCEL Button along With BELL button, when TRAIN COMING FROM is displaying FLASHING GREEN indication. |
| 3.3.6 | **SNK Indications** | Two such indications are provided. |
| | **SNK**<br>**YELLOW** | i) SNK (D): Yellow provided near TRAIN GOING TO directional arrowhead to Indicate LAST STOP SIGNAL and its controls at ON/ Normal.<br>ii) SNK (R): Yellow provided near TRAIN COMING FROM directional arrowhead to Indicate reception signal (s) & its controls at ON/ Normal |
| 3.3.7 | **SNOEK**<br>**(SNK other end)**<br>**YELLOW** | i) Provided near TRAIN COMING FROM directional arrowhead to Indicate LAST STOP SIGNAL and its controls at station in rear are at ON/ Normal. |
| 3.3.8 | **Last Stop Signal (LSS) Indications** | Circular in monogram of signal. |
| | **RED** | To indicate Last Stop Signal is at 'ON'. |

| | | |
|---|---|---|
| | **GREEN** | To indicate Last Stop Signal is at 'OFF'. |
| 3.3.9 | **LINE FREE indication** | To indicate Block Section is clear of vehicles. |
| | **GREEN** | |
| | **LINE OCUUPIED indication** | To indicate Block Section occupied. |
| | **RED** | |
| 3.3.10 | **ACKN indication** | A Indication near ACKN button. |
| | **YELLOW** | To indicate SECTION buzzer ON status. |
| 3.3.11 | **SM KEY `IN' indication** | Indication near SM KEY. |
| | **GREEN** | To indicate SM key "IN'. |
| 3.3.12 | **SSBPAC(D) OK indication** | Glows GREEN when SSBPAC(D) is OK otherwise Extinguished. |
| 3.3.13 | **SSBPAC(D) FAIL indication** | Glows RED when SSBPAC(D) goes into a failure mode otherwise Extinguished. |
| 3.3.14 | **Communication LINK FAIL indication** | Glows steady YELLOW when LINK FAILS otherwise flickering. |

## 3.4 SM's BLOCK PANEL IS PROVIDED WITH FOLLOWING BUZZERS:

| | | |
|---|---|---|
| 3.4.1 | **BLOCK Buzzer** | To register the BELL CODE sent by other end SM. |
| 3.4.2 | **SECTION Buzzer** | To register the occupation & clearance of each Block Section. |

## 3.5 CANCEL COUNTER:

To register the cancellation of Line Clear, It is incremented by one for every cancellation operation done which is a non-resettable type. Cancellation to be done by receiving station & CO-Op by sending station.

## 3.6 BLOCK TELEPHONE:

For Speech Communication with SM at other end of Block Section.

## 4.0 OPERATION OF BLOCK PANEL:

### 4.1 Method of Signaling Trains from Block Station to Block Station on an UP/DN line in a Double Line section.

a) SM of the station intending to send a train from his station has to obtain verbal consent on block telephone or alternate means from station in advance before taking LINE CLEAR on its Block Panel. Entries of train no. to be made in registers of both stations.
b) Before a request for IS LINE CLEAR is sent to station in advance, SM of sending station shall ensure the following near TRAIN GOING TO arrowhead on its Block Panel;
   i) LINE CLOSED indication YELLOW &

ii) LINE FREE indication GREEN &
iii) SNK indication YELLOW.

c) The station in advance while granting his verbal consent shall ensure the following near TRAIN COMING FROM arrowhead on its Block Panel;
i) LINE CLOSED indication YELLOW &
ii) LINE FREE indication GREEN &
iii) SNK indication YELLOW &
iv) SNOEK indication YELLOW
Then inserts and turns LCB key.

a) Thereafter SM of sending station presses BELL & TRAIN GOING TO buttons.

b) The arrowhead, TRAIN GOING TO/ TRAIN COMING FROM lights up green at sending/receiving station respectively.

c) SM of sending station releases BELL & TRAIN GOING TO buttons on getting TRAIN GOING TO green indication.

d) The sending station SM after obtaining LINE CLEAR on its Block Panel can send the train into Block Section by taking the LSS to `OFF'. On entry of train into section, TRAIN ON LINE lights up RED at both the stations in arrowhead indication. SECTION buzzer sounds at both the stations along with ACKN indication near respective ACKN button. Pressing of ACKN button of concerned line ( Despatch /Receive) will turn off the buzzer and ACKN indication.

e) The train is received at receiving station on proper reception signals. On 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 arrowhead indication continues FLASHING GREEN at sending / receiving station respectively till reception & departure signals and their controls are not at normal or LCB Key is not `IN'. In case reception & departure signals and their controls are at normal & LCB key is IN, TRAIN GOING TO /TRAIN COMING FROM arrowhead indication turns off and LINE CLOSED indication lights up YELLOW.

**4.2 <u>Following is the sequence of operations of signalling a train between two Stations</u>.**

The block section being clear and the 'LINE CLOSED' indication being displayed on Block Panel at both the stations. The action is taken by sending stations SM as under:

| | **Sending Station** | | **Receiving Station** |
|---|---|---|---|
| 1. | Ensure LINE CLOSED indication YELLOW, SNK indication YELLOW, LINE FREE indication GREEN.<br>8 Insert SM key & turns to IN.<br>b) Send 'Call Attention' signal to receiving station by pressing BELL button. | 2. | Acknowledges the 'Call Attention' signal by pressing BELL button. |
| 3. | Sends 'Attend Telephone' signal by pressing BELL button. | 4. | Acknowledges by pressing BELL button and attends telephone. |
| 5. | Attend telephone and advises station in advance about the intended movement of the train on telephone & ask for LINE CLEAR.<br>Give Number and description of train and ask for Line Clear. | 6. | a) Ensures LINE CLOSED indication YELLOW, SNK indication YELLOW, LINE FREE indicator GREEN & LCB key IN &<br>b) Then say "LINE IS CLEAR FOR ….. TRAIN" supported by a PN. |

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|---|---|---|---|
| 7. | Repeat the PN and SM simultaneously presses BELL & TRAIN GOING TO buttons until 'TRAIN GOING TO' arrowhead indication lights up GREEN.<br>(If aforesaid indication does not appear after 3 seconds (approx.) of pressing the buttons, SM releases the buttons and rechecks conditions at his station and asks station in advance to recheck the conditions for grant of LINE CLEAR.) | 8. | 'LINE CLOSED' indication turns off and 'TRAIN COMING FROM' arrowhead indication lights up GREEN. |
| 9. | 'LINE CLOSED' indication turns off.<br>'TRAIN GOING TO' arrowhead indication lights up GREEN.<br>Releases BELL & TRAIN GOING TO buttons. | | |
| 10. | Takes LSS to `OFF'<br><br>SNK indicator turns 'OFF'.<br><br>Train enters the Block Section.<br>LSS indication on block panel turns to red.<br>LINE OCCUPIED indication lights up RED.<br><br>SECTION buzzer starts ringing & 'TRAIN GOING TO' Arrow Head Indication turns RED. ACKN (TGT) indication lights up.<br><br>Acknowledges the buzzer by pressing ACKN (TGT) button. ACKN (TGT) indication turns off and buzzer is silenced.<br>Puts back the LSS controls to Normal.<br>Ensures SNK lights up YELLOW. | 11 | SNOEK indicator turns 'OFF'.<br><br>LINE OCCUPIED indication lights up RED.<br><br>SECTION buzzer starts ringing & 'TRAIN COMING FROM' Arrow Head Indication turns RED. ACKN (TCF) indication lights up.<br><br>Acknowledges the buzzer by pressing ACKN button. ACKN (TCF) indication turns off and buzzer is silenced.<br><br>SNOEK lights up YELLOW.<br><br>Takes reception signal(s) `OFF' to receive the train.<br>SNK indicator turns 'OFF'<br>Train passes Home Signal. Signal replaces to `ON'.<br><br>Train clears the Block Section including Block overlap. |

| | | | |
|---|---|---|---|
| 13 | SECTION buzzer starts ringing. ACKN (TGT) indication lights up YELLOW.<br>LINE FREE indication turns to GREEN.<br>`TRAIN GOING TO' indication turns FLASHING GREEN.<br><br>Acknowledges the buzzer by pressing ACKN (TGT) button. ACKN (TGT) indication turns off and buzzer is silenced. | 12 | SECTION buzzer starts ringing.<br>ACKN (TCF) indication lights up YELLOW.<br>LINE FREE indication turns from red to GREEN.<br>'TRAIN COMING FROM' Arrow Head Indication turns from red to FLASHING GREEN.<br><br>Acknowledges the buzzer by pressing ACKN (TCF) button. ACKN (TCF) indication turns off and buzzer is silenced. |
| 15 | `TRAIN GOING TO' Arrow Head Indication turns off.<br><br>`LINE CLOSED' indication lights up. | 14 | Replaces all controls pertaining to reception of train to Normal.<br><br>SNK lights up YELLOW.<br>`TRAIN COMING FROM' Arrow Head flashing green Indication turns off.<br>'LINE CLOSED' indication yellow lights up. |

## 4.3 REFUSAL TO 'LINE CLEAR ENQUIRY'

When the SM does not want to grant line clear for any reason block section is blocked by the presence of a train in the section or train parting or shunting or opening of level crossing in mid section or for any other reason, the LCB key shall be taken out and kept in safe custody of the SM of the receiving station.

On removal of obstruction, SM of receiving station shall immediately inform SM of sending station in rear about the line free condition and put LCB Key IN, so as to enable him to send a fresh LINE CLEAR ENQUIRY.

## 4.4 Cancellation of 'LINE CLEAR'

After a sending station has taken LINE CLEAR, in case of cancellation of train or for testing, the receiving station can carry out LINE CLEAR cancellation by pressing BELL & CANCEL button with SM key IN only when the CO-OP button at the sending station is kept pressed. TRAIN GOING TO / TRAIN COMING FROM arrow indication turns to FLASHING GREEN at sending/ receiving station respectively.

### a) Method of Cancellation due to cancellation of train

| SENDING STATION | | RECEIVING STATION | |
|---|---|---|---|
| 1. | Give call attention signal Put back LSS to `ON', if already taken `OFF, ensures;<br>SNK indicator YELLOW,<br><br>Advises receiving end station SM about circumstances for cancellation after prescribed BELL code supported by a PN. | 2. | Acknowledge and attend telephone<br><br>Agrees to request, ensures;<br>SNK indicator YELLOW,<br>SNOEK indicator YELLOW,<br>and gives consent supported by a PN. |

| | | | |
|---|---|---|---|
| 3. | After verbal consent from other end SM<br><br>Presses CANCEL CO-OP button and releases on receipt of BELL code | 4. | <br><br>CO-OP to light up YELLOW<br>Presses BELL & CANCEL button with SM key IN<br>CANCEL COUNTER increments by 1<br><br>'TRAIN COMING FROM' indicator turns from green to FLASHING GREEN<br><br>CANCEL indicator lights up FLASHING YELLOW & continues flashing for 120 seconds |
| 5. | 'TRAIN GOING TO' indicator turns from green to FLASHING GREEN | 6. | On expiry of 120 seconds,<br>TRAIN COMING FROM indicator arrow and CANCEL indicator turns off<br><br>'LINE CLOSED' yellow indicator lights up |
| 7. | TRAIN GOING TO arrow indicator turns off<br><br>LINE CLOSED yellow indicator lights up | | |

## 4.5 Closing of Block after a PUSH BACK operation

After a train has been pushed back at the sending station, the sending station advises the receiving station on telephone. The receiving station can close the section by pressing BELL & CANCEL button after getting cooperation from sending station.

## 4.6 Method of Push Back operation

| SENDING STATION | | RECEIVING STATION | |
|---|---|---|---|
| 1. | Train clears the Block Section. LINE FREE indication turns GREEN. SECTION buzzer starts ringing. ACKN (TGT) indication lights up.<br>'TRAIN GOING TO' arrowhead indication turns to FLASHING GREEN.<br>Acknowledges the buzzer by pressing ACKN (TGT) button. ACKN (TGT) indication turns off and buzzer is silenced.<br>Ensure SNK indication YELLOW. | 2 | Train clears the Block Section. LINE FREE indication turns GREEN. SECTION buzzer starts ringing. ACKN (TCF) indication lights up.<br>'TRAIN COMING FROM' arrowhead indication turns from red to FLASHING GREEN.<br>Acknowledges the buzzer by pressing ACKN (TCF) button. ACKN (TCF) indication turns off and buzzer is silenced. |
| 3. | Requests other end station SM on telephone regarding closure of the block, after prescribed BELL code.<br>Give PN | 4. | On request from sending station SM about closing of block on telephone after prescribed BELL code.<br>Give PN.<br>Ensures SNK indication YELLOW. |
| 5. | Gives co-operation to other end station | 6. | Co-operation indication light up yellow. |

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| | | | |
|---|---|---|---|
| | for cancellation by pressing the cancel co-op button and releases on receiving a bell code. | | BELL and CANCEL button pressed, Released with SM key & LCB key IN, Cancel counter increments CANCEL indication lights up FLASHING YELLOW and continues flashing for 120 seconds.<br>On expiry of 120 seconds, TRAIN COMING FROM arrowhead flashing green indication & cancel yellow indication turns off.<br>LINE CLOSED indication yellow lights up. |
| 8. | TRAIN GOING TO Arrow Head Indication turns off.<br>LINE CLOSED indication yellow lights up. | 7. | On expiry of 120 seconds, TRAIN COMING FROM arrowhead indication & cancel indication turn off.<br>LINE CLOSED indication lights up. |

## 4.7 BLOCK BACK:

The SM, who intends to Block Back the line, shall inform the SM of station in rear on telephone for permission to Block Back, who will acknowledge the message and grant permission supported by a private number. SM who intends to block back takes LCB key OUT and keeps in safe custody. The SM will then issue necessary authority (Form T.806 with PN) to driver of train to perform shunting in Block Section.

On completion of shunting, section clear message will be sent to SM of station in rear on telephone about obstruction removed supported by a private number, who in turn will acknowledge the same supported by a private number. Thereafter SM will insert LCB Key and turn to IN position.

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.

**Method of Push Back operation**

| | **Station intending BLOCK BACK** | | **Station in rear** |
|---|---|---|---|
| 1. | Block Panel displays;<br>LINE CLOSED – YELLOW<br>LINE FREE – GREEN<br>SNOEK – YELLOW. | 2. | Block Panel displays;<br>LINE CLOSED – YELLOW<br>LINE FREE – GREEN<br>SNK - YELLOW |
| 3. | Inserts SM key and turns, Gives call attention by pressing bell button . | 4. | Acknowledges call attention / attend telephone signal by pressing bell button. |
| 5 | Attends telephone. | 6. | Attends telephone. |
| 7 | Inform intention to block back for shunting in Block Section. | 8. | Acknowledges and gives consent by private number. |
| 9 | The LCB is taken out and kept in safe custody. Issue necessary authority (Form T.806) to driver of train to perform shunting in Block Section. | | |
| 10 | On entry of train in Block Section, SECTION buzzer starts ringing and LINE CLOSED indication turns off. ACKN (TCF) indication lights up.<br>LINE FREE indication goes off and LINE OCCUPIED indication lights up RED. | 11. | On entry of train in Block Section, SECTION buzzer starts ringing and LINE CLOSED indication turns off. ACKN (TGT) indication lights up.<br>LINE FREE indication goes off and LINE OCCUPIED indication lights up RED.<br>Acknowledges the buzzer by pressing ACKN (TGT) button. ACKN (TGT) indication turns |

| | | | |
|---|---|---|---|
| | Acknowledges the buzzer by pressing ACKN (TCF) button. ACKN (TCF) indication turns off and buzzer is silenced. | | off. |
| 12 | On clearing of Block Section.<br>SECTION buzzer starts ringing and LINE CLOSED indication lights up. ACKN (TCF) indication lights up.<br>LINE OCCUPIED red indication turn off and LINE FREE indication turns to GREEN.<br><br>Acknowledges the buzzer by pressing ACKN (TCF) button. ACKN yellow indication turns off. | 13. | On clearing of Block Section.<br>SECTION buzzer starts ringing and LINE CLOSED indication lights up. ACKN (TGT) indication lights up.<br>LINE OCCUPIED red indication turns off and LINE FREE indication turns to GREEN.<br>Acknowledges the buzzer by pressing ACKN button. ACKN indication turns off. |
| 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.<br>Inserts SM key and turns, Gives call attention / attend telephone signal. | 15. | Acknowledges call attention /attend telephone signal. |
| 16 | Attends telephone. | 17. | Attends telephone. |
| 18 | Inform shunting is completed supported by a private number. | 19. | Acknowledges supported by a private number. |
| 20 | Inserts LCB and turn in. | | |

## 4.8 BLOCK FORWARD:

The SM, who intends to Block forward the line, shall inform the SM of station in advance on Telephone for permission to Block forward, who will acknowledge the message and grant permission supported by a private number. The SM of advance station takes LCB key OUT and keeps in safe custody. The SM of this station will then issue necessary authority (T.806 with PN) to driver of train to perform shunting in Block Section.

On completion of shunting, message will be sent to SM of station in advance on telephone about obstruction removed supported by a private number, who in turn will acknowledge the same supported by a private number. Thereafter SM of advance station will insert LCB key and turn to IN position.

All the entries in Train Signal Register for this operation should be made in RED ink. The reasons for Block forward shall be recorded in remarks column against each entry.

| | **Station intending BLOCK FORWARD** | | **Station in advance** |
|---|---|---|---|
| 1 | Block Panel displays;<br><br>LINE CLOSED – YELLOW<br><br>LINE FREE – GREEN | 2 | Block Panel displays;<br><br>LINE CLOSED – YELLOW<br><br>LINE FREE – GREEN |

| | | | |
|---|---|---|---|
| 3 | Inserts SM key and turns IN, Gives call attention /attend telephone signal by pressing bell button. | 4 | Acknowledges call attention by pressing bell button / attend telephone signal. |
| 5 | Attends telephone. | 6 | Attends telephone. |
| 7 | Inform intention to perform shunting in Block Section. | 8 | Acknowledges and gives consent by private number. |
| 10 | Issue necessary authority (T.806 with PN) to driver of train to perform shunting in Block Section. | 9 | The LCB Key is taken out and kept in safe custody. |
| 11 | On entry of train in Block section, SECTION buzzer starts ringing and LINE CLOSED indication turns off. ACKN (TGT) indication lights up.<br>LINE FREE green indication turns off. LINE OCCUPIED indication red lights up.<br>Acknowledges the buzzer by pressing ACKN (TGT) button. ACKN (TGT) indication yellow turns off. | 12 | On entry of train in Block section, SECTION buzzer starts ringing and LINE CLOSED indication turns off. ACKN indication lights up Yellow.<br>LINE FREE indication turns to RED.<br>Acknowledges the buzzer by pressing ACKN (TCF) button. ACKN (TCF) indication turns off. |
| 13 | On clearing of Block Section.<br>SECTION buzzer starts (TGT) ringing and LINE CLOSED indication lights up yellow.<br>ACKN indication lights up Yellow.<br>LINE FREE indication turns to GREEN.<br>Acknowledges the buzzer by pressing ACKN (TGT) button. ACKN (TGT) indication yellow turns off. | 14 | On clearing of Block Section<br>TCF SECTION buzzer starts ringing and LINE CLOSED indication yellow lights up. ACKN (TCF) indication lights up yellow.<br>LINE FREE indication turns to GREEN.<br>Acknowledges the TCF buzzer by pressing ACKN (TCF) button. ACKN (TCF) indication turns off and buzzer is silenced. |
| 15 | On completion of shunting, SM verifies the line between STARTER /Shunt signal/Stop Board/fouling mark and LAST STOP SIGNAL, free from any vehicle.<br>Gives call attention to attend telephone by pressing bell button. | 16 | Acknowledges call attention by pressing bell button. |
| 18 | Attends telephone. | 17 | Attends telephone. |
| 20 | Inform shunting is completed supported by a private number. | 19 | Acknowledges supported by a private number. |
| | | 21 | Inserts LCB and turn in. |

## 4.9 SHUNTING OF TRAIN

### 4.9.1 SHUNTING OF TRAIN UP TO LAST STOP SIGNAL

While shunting on despatch line, the LAST STOP SIGNAL should be kept at ON.
SM Key shall be taken out. The driver of shunting train shall be given shunting order to shunt up to LAST STOP SIGNAL. On completion of shunting, the line between STARTER/Shunt Signal/Stop Board/fouling mark and LAST STOP SIGNAL should be checked free from any vehicle and only then SM key shall be inserted and turned to IN position.

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### 4.9.2 SHUNTING BEHIND A TRAIN

Shunting behind a train should be performed with a message to station in advance. The station in advance shall take LCB Key out and keep in safe custody.

Shunting shall be performed as per 8.9.1. On completion of shunting, SM of sending station verifies the line between STARTER/Shunt Signal/Stop Board /fouling mark and LAST STOP SIGNAL free from any vehicle. The message regarding completion of shunting shall be sent to station in advance.

SM of station in advance inserts LCB Key and turns to IN position.

## 5.0 BLOCK FAILURES AND ACTION TO BE TAKEN:

The block failures can be categorized into the following:

### 5.1 FAILURE of the BLOCK PANEL:

Block panel should be considered defective for Up and /or Down trains, as the case may be. The Block Panel should not be restored for normal working until tested by competent signal staff and 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 (OK indication) again block panel operation can be restored.

| CAUSE OF FAILURE | ACTION TO BE TAKEN |
|---|---|
| 1.When no indication of any sort, at all appears on the block panel.<br>**OR**<br>2. When the Bell Code signals are received indistinctly.<br>**OR**<br>3. Any damage is seen or reported to block equipment.<br>**OR**<br>4. When none of the indications viz. 'TRAIN COMING FROM and TRAIN GOING TO' appears on the block panel except 'LINE FREE'.<br>**OR**<br>5. When no train has entered into the block section but the 'LINE OCCUPIED' indication lights on RED on both lines and these indication persists even after resetting of the Axle Counters have been tried.<br>**OR**<br>6. 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<br>**OR**<br>7. When BI Fail indication (SSBPAC (D) red) | For case 1-9, Block Panel should be treated as defective block working suspended and trains should be dealt with by taking LINE CLEAR on the electrical communication equipment provided and by provisions of GR 14.13 and SR there under, if any. |

| | |
|---|---|
| comes.<br>**OR**<br>8. When Link Fail indication becomes steady yellow.<br>**OR**<br>9. When 'TRAIN GOING TO' or 'TRAIN COMING FROM' Arrow Head Indications do not appear by appropriate action though condition for asking 'LINE CLEAR' and granting permission to approach are available.<br>**OR**<br>10. TRAIN GOING TO or TRAIN COMING FROM Arrow Head Indications does not turn to RED to give TRAIN ON LINE indication on the entry of train into Block Section at either of the stations<br>**OR**<br>11.When a train has arrived at the receiving station but the Block Panel shows FLASHING GREEN/GREEN indication even after ensuring SNK indication and LCB key IN<br>**OR**<br>12.When, after a cancellation, CANCEL indication does not light up FLASHING YELLOW or STEADY YELLOW after appropriate actions<br>**OR**<br>13. When Last Stop Signal cannot be kept at 'ON' during its suspension /disconnection.<br>14. When Last Stop Signal of the station does not go back to 'ON' position on the entry of a train into the Block Section | For case 10-12, the Block Panel should be treated as defective for respective line, Block working suspended for respective line and trains should be dealt with by taking LINE CLEAR on the electrical communication equipment provided and by provisions of GR 14.13 and SR there under, if any.<br><br>In addition to action taken for case 1-12, all efforts should be made to keep the LAST STOP SIGNAL at ON position. If it is not possible, then a competent railway servant should be deputed with RED hand signal at the foot of the LAST STOP SIGNAL to warn the drivers of the approaching trains. In addition all trains in the relevant direction should be stopped at Home signal and after ensuring that they have come to a stop, the Home signal should be cleared to caution aspect only.<br>The STARTER signal should not be taken OFF until the issue of relevant authority to pass the STARTER and LAST STOP SIGNAL to the driver. Caution order should also be issued to the driver about the defect of LAST STOP SIGNAL. |
| 15. Total failure of communication during which train shall be worked as per extent rules in force on the Railway | In addition to action taken for case 1-14, the trains should be dealt with under the extent rules as outlined in GR 14.13 and SR there under |

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### 5.2 Failure of LAST STOP SIGNAL & Action to be taken:

| Cause of failure of the LAST STOP SIGNAL | Action to be taken |
|---|---|
| 1. When LSS cannot be taken OFF even though LINE CLEAR has been obtained; or; | BLOCK PANEL shall be suspended.<br>The LAST STOP SIGNAL should be considered to have failed and failure shall be informed to Signal staff immediately. Line Clear ticket/Paper line clear as prevalent on railway shall be issued to driver of train. |
| 2. When LSS can be cleared without obtaining LINE CLEAR; or; | BLOCK PANEL shall be suspended.<br>The LAST STOP SIGNAL should be considered to have failed and failure shall be informed to Signal staff immediately and follow 9.1.13-9.1.14. |
| 3. LSS does not restore to ON position on entry of train into Block Section. | BLOCK PANEL shall be suspended.<br>The LAST STOP SIGNAL should be considered to have failed and failure shall be informed to Signal staff immediately and follow 9.1.13-9.1.14. |

### 5.3 Suspension of Block working & Actions to be taken

| **Cause of Suspension** | **Action to be taken** |
|---|---|
| 1. When material lorries or Motor trolleys or Tie-tamping machines or Rail Motor/ Bus or Rail cum road vehicle or Tower wagon (4 wheeler) has to run in the section. | BLOCK PANEL shall be suspended for respective line and these vehicles shall be worked on PAPER LINE CLEAR. |
| 2. An accident takes place in the mid section. | BLOCK PANEL shall be suspended for both lines, if line adjacent to affected line is reported to have been infringed, till the infringement exists<br>for despatch line or,<br>LAST STOP SIGNAL shall be treated as INOPERATIVE and FAILED. |
| 3. When any part of Block Panel is opened or removed for repairs under duly accepted disconnection notice. | BLOCK PANEL shall be suspended<br>LAST STOP SIGNAL shall be treated as INOPERATIVE and FAILED. |
| 4. When Last Stop Signal of the station has been taken by Signal staff for repairs. | LAST STOP SIGNAL shall be treated as INOPERATIVE and FAILED. |
| 5. During Block FORWARD. | LAST STOP SIGNAL shall be treated as INOPERATIVE and FAILED. |

When the cause of suspension of BLOCK PANEL and/or LAST STOP SIGNAL is removed the normal working of BLOCK PANEL and/or LSS as the case may be, shall be restored by SM.

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## APPENDIX - 'C'

## ANTI COLLISION DEVICE (RAKSHA KAVACH)

**NIL**

## APPENDIX - 'D'

1.0 **STATION MANAGER-I (INCHARGE)** :

He is the over all In-charge of the station; He is responsible for the efficient discharge of duties devolving upon all the Staff employed at the station whether permanent or temporary according to Station Working Rules, Manuals & safe working Instructions. He shall get himself well conversant with the detailed working of Station and E.I. system, points and signals etc.

He is responsible for maintaining the Assurance Register up-to-date. He shall conduct surprise night inspection and safety meetings/fire drills etc. as per instructions issued from time to time. He shall see that all the staff under his control working safely according to the rules in force.

He shall see that all signals, points, level crossing gates and the whole machinery at the station are in proper working order. He shall report all the defects to the concerned officials.

He shall satisfy himself that the staff employed under him are well conversant with Station Working Rules and perform their duties correctly. He is responsible for maintaining SWR, other Rule books and Assurance Register up to date.

He shall see that all safety records are maintained properly and all rules prescribed in G & SR, Block Working Manual, Operating Manual and other relevant directions issued from time to time by competent authorities are followed rigidly by all concerned and any irregularities if noticed are reported promptly to the authorities concerned.

He shall see that all accidents are promptly reported, attended to and GA-3 along with accident message is submitted to the concerned officers in time. He shall see that the staff is civil and helpful to all users of railway.

He shall frequently visit the platform, Station, LC gate etc. in order to maintain an effective supervision over the said staff and their working. He shall see that station premises are kept neat and clean.

He is responsible for booking all staffs working under him for PME and Refresher Course / Safety camp in their due time. His Special attention is drawn out to chapter II of General and Subsidiary Rules and GR 5.01 to 5.08 with relevant Subsidiary Rules, Chapter – I of Operating Manual.

He shall see that all equipment, apparatus and instruments including signal and interlocking gears are in proper working order and all failures are promptly reported to officials concerned for repairs/rectifications.

He shall pay special attention towards passenger amenities & coaching trains punctuality and yard feasibility. He shall endeavor for minimizing detention to freight trains by judicious planning of trains staff. He shall pay attention to smooth functioning of goods train to eliminate detentions. He shall attend to all compliance by traveling/trading public.

He shall see that the law and order in the station area is taken care of with the help of G.R.P. and R.P.F and civil authorities as per need.

He shall ensure compliances of all Operating, Safety and Commercial records maintained at the station. He is responsible for overall supervision of the station.

His special attention is drawn to chapter No.II of G & SR 1976 (Revised-2012/2020) and GR 5.01 to 5.08 with relevant SRs. He shall follow the instruction laid down in SR 3.68.01(c) & (d) and SR 14.07.01 and BWM 2.09 (e).

He shall conduct surprise night inspection, safety meetings and fire drills. He shall maintain good public relation as well as look after passenger's amenities and be helpful to travelling public.

1.1 **ASSURANCE REGISTER:**

All staff before taking up independent charge of their duties at this station shall make a written declaration in the assurance register that they have read and thoroughly understood the system in force and must sign such declaration.

No Railway servant shall be entrusted with any duty involving safety of the public unless the station in-charge is satisfied that the concerned staff is competent for the post. No Railway servant unless duly examined and certified shall be allowed to work the points and signals. The SS is responsible to see that all the staff are conversant with the Station Working Rules and their signature obtained in the Assurance register after he is satisfied that they have thoroughly understood the working rules of the station. In case of Group 'D' staff, their signature/thumb impression must be obtained after explaining fully about their duties and responsibilities.

The station superintendent is responsible personally for maintaining the Assurance Register and for obtaining declaration of the staff working under him. The Assurance Register must be maintained in two parts, one for Group 'C' and the other for Group 'D' staff. A duplicate copy of the Assurance Register must be maintained and kept in personal custody of the Station Superintendent.

The declaration shall be renewed in the following cases: -

(i) Whenever there is a change in the Station Working Rules.
(ii) For any staff who have not worked at the station or were away from the station for a period of 15 days or more.

2.0 **USE OF PRIVATE NUMBER BOOKS IDENTIFICATION NUMBER SHEET** :-

Sufficient Private Number books and I.D number sheets in sealed covers shall be kept always in the stock by Station Superintendent under lock and key. He shall maintain a register for this purpose.

3.0 **ACCIDENTS**:

Accidents shall be reported and immediate action shall be taken by the Station Superintendent in charge in accordance with the instruction laid down in the Accident Manual. Whenever the Station Superintendent received report of an accident, he shall take all necessary precautionary measures to protect the traffic and shall arrange earliest possible assistance as required at the site of accident. He shall frame the accident message/reports and follow up all safety principles without delay.

4.0 **TESTING OF POINTS AND SIGNALS**:

The Station Superintendent shall test the working of the reception signals daily during the day when there is no train due to arrive/leave the station. He shall also test the working of points, crossings, Crank Handle, etc. and record the result in the Station Master's diary.

5.0 **SS/STATION MASTER**:

He shall work in 8 hrs. shift for train passing and booking of traffic, coaching returns and other statements shall be prepared and submitted by him in time under the direction of the Station Superintendent in charge. He shall assist the Station Superintendent in charge for the up keep of the station in all aspects.

Station Master on duty who makes an entry in the train signal register must continue on duty till all the entries pertaining to the trains are completed vide Subsidiary Rule 14.07.01.

He is responsible for working beyond this period when called upon to do so in the exigencies of services. He will follow SR 3.68.01(c) & (d), SR 14.07.01. Their special attention is drawn to Chapter II of G & SR 1976 (Revised-2012) and GR 5.01 to 5.08 with relevant SRs. As an Assistant to the SS, he shall follow the instructions given to him by the Station Superintendent.

6.0 **HANDING OVER AND TAKING OVER CHARGE**:

The Station Superintendent in charge/Station Master on duty shall record in the diary the condition of all the running lines, the caution orders in force at the time of handing over charge. These entries must be counter signed by Station Master coming on duty while taking over charge. This will not, however, relieve any one of the SM of his responsibility to ensure by physical check that the nominated line is clear of all obstructions before admission of any train on it.

7.0 **TRAFFIC POINTSMAN:**

He shall work under the instructions of SM on duty and follow the GR 02.05 to 2.11 and other relevant rules laid down in GR and SR. He shall remain responsible for:

(i) Delivery of authority to proceed and caution order etc. to the Loco Pilot of train.
(ii) Correct setting and locking and crank handling of points for reception/despatch and shunting operation under the supervision of Station Master.
(iii) Piloting and hand signaling of trains when necessary.
(iv) Knowledge of hand signals, detonators and their use.
(v) Protection of line in emergency and fog signaling.
(vi) Exchange of signals with the Loco Pilot and Guard of passing trains as directed by the Station Master.
(vii) Cleaning, Oiling and lighting of lamps.
(viii) Loading/unloading of parcels, luggage and packages to and from the train and watching the packages and other materials by properly stacking in the station premises.
(ix) Dusting of station office, filling up the fire buckets with sand/water and getting train intact arrival register (T/1410) signed by the Guard as and when required.
(x) Serving messages and any other duties entrusted to them by the SMR/SM from time to time.
(xi) Uses of emergency crank handle for setting of points.

(xii) To supervise shunting as per SR 5.13.03.

(xiii) They must be thoroughly conversant with the GR 3.38, 3.46, 3.77(I), 5.09, 3.52 to 3.60, 3.62, 5.13, 5.15, 5.16, 5.21, 5.23 & SRs there to and their special attention is drawn to chapter No.II of G & SR (Amendment) 2000 also.

(xiv) When necessary, they will work in the Goomties for observing and reporting the complete/incomplete arrival/departure of trains as per the order of the SM on duty In case of failure of Axle Counter/Track Circuit.

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## APPENDIX - 'E'

## ESSENTIAL EQUIPMENT OF THE STATION

Below is the list of essential safety equipment, which shall be readily available in good working order with necessary relief stock.

| Sl.No. | Description | Quantity |
|---|---|---|
| 01. | Detonators | 20 in tin case |
| 02. | Tri colour torch | 06 Nos. |
| 03. | Hand signal flags | 06 sets. |
| 04. | Safety chains with pad locks | 12 Nos. |
| 05. | Wooden Wedges | 12 Nos. |
| 06. | SKID | 02 Nos. |
| 07. | Fire buckets (with sand and water) | 06 Nos. |
| 08. | Clamps with padlocks | 16 Nos. |
| 09. | "Block suspension" Boards | 04 Nos. |
| 10. | "Motor Trolley on Line" Boards | 04 Nos. |
| 11. | First aid Box | 01 No. |
| 12. | Stretcher | 01No. |
| 13. | Fire extinguisher | 02 Nos. |
| 14. | Blanket | 01 No. |

## APPENDIX - 'F'

## RULES FOR WORKING OF DK STATIONS, HALTS, IBH, IBS AND OUTLYING SIDING

## RULES FOR WORKING INTERMEDIATE BLOCK SIGNALLING BETWEEN BISSAM CUTTACK-THERUVALI AND BISSAM CUTTACK-MUNIGUDA STATIONS.

### IBS between BMCK - THV:

The block section between BMCK and THV has been split into two block sections by providing Intermediate Block Stop signals at KM 313.440 [controlled by BMCK station] for UP line and on DN line at KM 313.935 [controlled by THV station]. Intermediate Block stop signals are controlled through double line lock and block panels at the respective receiving ends.

A) The Block working for section between BMCK and THV on UP and DN lines are controlled by the DLBI and are provided at BMCK station and at THV station. The UP LSS signal No.45 of BMCK station and DN LSS signal No.18 of THV station are controlled by the clearance of IB section through respective IB section monitoring axle counters and the IB Home signal are controlled in turn through the line clear position of respective Double Line Block Instrument at the receiving stations.

B) Trains between intermediate block signal to respective Home signal of Station in advance in both the sides are worked by means of Block Instrument vide 4.09, 5.07, 14.01 to 14.14 of the G & SR and chapter IV of BWM.

C) Last stop signal to the intermediate block stop signal in both the sides are controlled by Digital Axle counters and are worked under absolute block system in terms of G & SR 14.01, 14.13. Indications on VDU provided at BMCK and at THV stations.

D) **INDICATIONS PROVIDED ON VDU FOR I.B. SECTION:**

The indications of signals, IB and Block sections in both up and down directions are shown in the following table:

**i) SECTION: BMCK - THV**

| SN | Signal Aspect [S-45] | IB Section Indication [45IBXT] | IB Home Aspect [S-49] | Block Section Indication | Remarks. |
|---|---|---|---|---|---|
| 1 | Green | Green illuminated when Section is clear. | - | - | LSS No.45 is taken off to despatch a train up to UP IB Home. |
| 2 | Red | Red illuminated When train enters in to the section. | - | - | IB Section is occupied. |
| 3 | - | - | Green | Green illuminated when Section is clear. | IB Home taken off for train up to Home signal of THV. |

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| | | | | | |
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| 4 | - | - | Red | Red illuminated When train enters in to the section. | Block section is occupied or IB Home signal passed at danger. |

**ii) <u>IB SECTION: THV-BMCK</u>**

| SN | Signal Aspect [S-18] | IB Section Indication [18AXT] | IB Home Aspect [S-20] | Block Section Indication | Remarks. |
|---|---|---|---|---|---|
| 1 | Green | Green illuminated when Section is clear. | - | - | LSS No.18 is taken off to despatch a train up to DN IB Home. |
| 2 | Red | Red illuminated When train enters in to the section. | - | - | IB Section is occupied. |
| 3 | - | - | Green | Green illuminated when Section is clear. | IB Home taken off for train up to Home signal of BMCK |
| 4 | - | - | Red | Red illuminated When train enters in to the section. | Block section is occupied or IB Home signal passed at danger. |

**E) Buzzer/Bell**:

One audio buzzer is provided in the VDU at BMCK to detect train Entering section for outgoing trains. After train passes the intermediate block stop signal, the buzzer/bell will start ringing on VDU at BMCK station. On hearing the buzzer/bell the SM must acknowledge the same by pressing on train entering section [TES] muting button to stop the buzzer/bell and then send train entering section report to the SM of the station in advance who shall turn commutator of the Double Line Lock and Block Instrument from the Line Clear position to 'Train On Line position' and acknowledge train entering section following the procedures laid down vide Block Working Manual.

F) In the event of failure of I.B. track circuit [i.e. track clear indication not available] which shall not permit taking 'OFF' last stop signal, it should be ensured by SM on duty at the despatching station through exchange of private number with the SM of the receiving station that the last train that passed the last stop signal of his station has fully arrived at receiving station, before allowing the next train to enter in to the section, such permission to the next train shall be granted and the section BMCK-THV shall be treated as single section.

By issuing the pilot memo when normalization of the system is not possible. In such case, line clear has to be taken on lock and block instrument, trains are to be despatched from the station only after obtaining line clear till such time IB track circuit is restored to normal.

**SUSPENSION/CLOSURE OF INTERMEDIATE BLOCK POST**

In the event of suspension of Lock and Block Instrument or Failure/ Suspension of Intermediate Block Home or failure of track circuits beyond the Intermediate Block Signal on UP or DN line or failure of Axle counter, the concerned section shall be suspended, the intermediate Block Post concerned shall be deemed to be closed and section between the stations on either side of the Intermediate Block Post concerned shall be treated as one block section. Refer to General Rule No. 3.70 and 3.75. The authority to pass the Advanced Starter and Intermediate Block Stop Signal concerned at 'ON' shall be issued by the SM immediately in rear of such signal.

G) **NORMALIZATION OF THE TRACK SECTION AND OF BLOCK WORKING BY RESETTING FEATURE:**

i) No train should be allowed to leave station in any particular direction unless I.B. track clear indication is available for the relevant track circuited portion of I.B. section and last stop signal cannot be taken off.

ii) A Resetting arrangement for the resumption of I.B. Axle counter under failure condition through co-operative features of both the SM on duty at either end station of the Block section is provided, which should only be resorted to after the train that was lastly sent arrives fully at the receiving station and is certified in this respect by the SM at the receiving station through exchange of private number.

iii) For monitoring of I.B. section working & re-setting of I.B. Axle counters, Track Indications and Re-setting arrangements are provided with button icon on the VDU at BMCK station and on the VDU at THV station. Counters are also provided for the purpose of recording the re-settings for the I.B. Axle Counters in case of failures in IB section.

iv) The SS/S.M on duty at both the station shall maintain a separate register for use of resetting at IB Axle Counters wherein every operation of the resetting button shall be recorded giving details of date of use, train, number, time, number registered in the counter on VDU and reasons for resetting and initial each such entry.
The procedure for resetting of the I.B. Axle counters shall be as follows:

**SECTION: BMCK – THV ON UP LINE**:

| | **DESPATCHING STATION [BMCK]** | | **RECEIVING STATION [THV]** |
|---|---|---|---|
| 1 | SM on duty shall call the attention of SM of THV station through Telephone for re-setting I.B. Axle counter zone giving details of last train left the station into the section. | 1 | SM on duty at THV after verifying that the said despatched train arrives fully, shall exchange private number with SM on duty at BMCK and gives permission to re-set by clicking the 'Permission Granting' icon provided on the VDU. After clicking of push button, a popup menu will appear |

| | | | |
|---|---|---|---|
| | | | consists of “Permission granting” and “Permission restore”. Click “Permission granting” option. SM will find a “Yellow” color indication above the push button.<br>For each such operation the permission granting counter provided in the VDU shall increase by one digit.<br><br>SM on duty shall make an entry of changed permission granting counter number in counter register. |
| 2 | On getting permission to reset from THV, a flashing indication will appear on VDU (Permission received from THV) above permission acknowled-gement button which shall be acknowledged by SM on duty by clicking “Permission received from THV acknowledgement button icon and flashing indication will become steady.<br>On duty SM at BMCK will then insert the IB reset key. Then the SM will press the IB reset button icon appearing on the VDU for getting IB axle counter to be reset. After applying resetting on doing the above process for resetting of the IB axle counter first train has to be piloted. On passing of the first piloted train IB axle counter will get reset.<br>In case train passed at danger, the aforesaid resetting procedure is to be carried out and no need of first train piloting.<br>For each such operation the IB reset counter provided in the panel shall increase by one digit.<br>SM on duty shall make an entry of changed resetting counter number in resetting register. | 2 | SM on duty at THV shall withdraw the permission by clicking the “permission granting” button icon provided on the VDU. After clicking of push button icon, a popup menu will appear consist of ‘Permission Granting’ and “permission restore”.<br><br>Click “permission restore” option the yellow colour indication above the push button will goes blank. |

**SECTION: THV-BMCK ON DN LINE:**

| | **DESPATCHING STATION [THV]** | | **RECEIVING STATION [BMCK]** |
|---|---|---|---|
| 1 | In case of failure of axle counter between IB signal and receiving station, SM on duty of receiving station, after verifying that the last train has arrived fully shall call the attention of the SM of sending station through telephone giving details of last train left the station into the section has arrived complete and exchange private number with SM on duty of sending station and ask for granting permission for resetting of the LVV. | 1 | SM on duty at sending station shall give permission to reset by clicking on the 'Reset Permission Button' icon provided on the VDU. Then a yellow indication will appear near the icon. |
| 2 | On getting permission to reset from sending station, a flashing green indication will appear on Permission Received icon which shall be acknowledged by SM on duty by acknowledging 'Permission Ack. Button' icon and then flashing green indication will become steady.<br>On duty SM at receiving station shall then make IB Reset 'key IN' on the VDU and then click 'PRESS' on the 'Reset Push Button' icon. Approximately after 5 seconds click the 'RELEASE' on the reset button icon and then make the reset 'key OUT'. On doing the above resetting process, preparatory reset indication will appear on VDU.<br>T/369(3b) shall be issued to loco pilot of first train to pass IBS at ON. On passing of the first train LVV Axle counter will get reset.<br>For each such operation, the LVV reset counter provided shall increase by one count. SM on duty shall make an entry of changed Reset counter number in re-setting register. | 2 | SM on duty at sending station shall give permission to reset by clicking on the 'Reset Permission Button' icon provided on the VDU. Then a yellow indication will appear near the icon.<br>For each such operation, the LVV reset counter provided shall increase by one count. SM on duty shall make an entry of changed Reset counter number in re-setting register. |

**H) <u>DESPATCH OF TRAINS</u>:**

Despatch of trains is governed by the provision of GR 3.42, 3.70 & SR there to and Block working manual rules. For despatching trains with last vehicles/trains without

guard/banking engine in rear, JPO and safety circulars issued along with relevant GR & SRs to be followed.

**From BMCK towards THV**.
Train will be despatched in accordance with the General Rules 3.42, 3.70., 3.75, 4.35 and 8.01 and subsidiary Rules thereto.

**BMCK TO IBS ON UP LINE:**
The SM on duty shall ensure that the portion of line between Advanced Starter and 400 Mtrs beyond IBS at their respective ends is clear of obstruction and indication to this effect is available and shall also ensure any non-isolated shunting at their respective ends suspended and shunting authority issued if any is withdrawn and kept in his custody.

**IBS SIGNAL TO THV:**
The SM on duty BMCK shall obtain line clear through lock & Block instrument from station in advance (THV) to despatch a train in to section and pass the IBS signal through by taking off the IBS signal no. 49 of BMCK for UP line.

After the train passes the UP IBS a buzzer will ring at both the receiving and despatching stations. On hearing the buzzer/bell the SM must acknowledge the same by pressing train entering section [TES] muting icon to stop the buzzer/bell and then send train entering section report to the station master of the station in advance who in turn will turn the commutator of the Double line Lock and Block Instrument from the line clear position to Train On Line position and acknowledge train entering section. After despatch of a train from BMCK into the Block section, in case when the intermediate stop signal is not taken 'off' but the buzzer has started ringing, this may be either due to the train passing intermediate Block stop signal at 'ON' position or due to failure of the track circuit in advance of that intermediate Block Signal. The SM on duty will then inform the matter to SCR on duty and concerned S&T official.

The above procedure must be rigidly followed irrespective of the fact whether line clear for train has been received from station in advance or not and this must be recorded in the Train Signal Register and SM's diary book of both the Stations.

**I) DESPATCH OF TRAINS TOWARDS THV STATION IN CASE OF FAILURE OF THE UP ADVANCE STARTER SIGNAL DUE TO FAILURE OF "IB AXLE COUNTER" DEVICE OR OTHERWISE-**

If the failure of the UP Advanced starter of BMCK due to the failure of IB axle counting device or the indication showing 'Red' light either due to power failure or due to any other cause, the SM should resort to the resetting procedure mentioned in Para G(iv).

If it is not possible to restore normal working of the IBS by use of the resetting procedure, the ESM-in-charge of the section shall be served with a written memo to attend the defective signal and rectify the same. The ESM-in-charge of the section on being served with a memo by the SM shall attend the failure and rectify the fault. The ESM after ensuring that all S&T gears relating to defective signal have been attended to and are in working order except the axle counter which needs re-setting, shall establish

communication with SM concerned and ask him to reset the IB axle counter by following the reset procedure mentioned in the Para G(iv). SM on duty shall follow the resetting procedure after ensuring that all the trains which had left his Block Station had arrived complete and intact at THV (by exchanging of P.N with SM/THV confirming this) for resumption of normal working.

J) **DESPATCH OF TRAINS IN CASE OF FAILURE OF INTERMEDIATE BLOCK STOP SIGNAL:**

[a] When a Loco Pilot finds an intermediate Block Stop signal at 'ON' Position he shall stop his train in rear of the signal and advise the guard of the fact by sounding long continuous whistle and shall then contact the Station Master of the Block Station in rear over the signal post telephone provided for the purpose vide SR.3.75.01[i].

[b] If the SM of BMCK station on being contacted over Telephone by the Loco pilot, finds that the signal is defective, he shall, after obtaining "Line Clear" for the train from the station in advance, authorize the Loco Pilot on the telephone to pass intermediate Block Signal at "ON" and enter the block section ahead. He shall give Loco Pilot the Private Number and Identification Number under which he has received "Line Clear" for the train from the station in advance.
The Loco Pilot shall then sound one short, one long and one short whistle and, on receipt of Guard's signal shall proceed ahead duly exchanging signals with him. The station Master on being contacted by the Loco Pilot on signal post telephone if he is unable to obtain "Line Clear" for the train due to total interruption of communications, shall call for the Guard through the Loco Pilot and on being contacted by guard, he shall advise the guard of the circumstances and give a Private Number for the train to proceed up to the next block station. The guard shall prepare a memo in duplicate authorizing the Loco Pilot to proceed with the Private Number received from the Station Master. In such case the speed of the train shall be restricted as prescribed in GR 3.75(3).

[c] In such case the Loco Pilot shall pass the IB signal at "ON" and proceed cautiously and be prepared to stop short of any obstruction, at a speed not exceeding 15 Kilometers an hour if he has a good view of the line ahead otherwise, at a speed not exceeding 8 kilometers an hour and report the failure to the Station Master at the block station ahead.
While complying with the instructions contained in GR 3.75(3), when the Loco Pilot has to pass IB signal at "ON" after waiting for 5 minute at the signal, he shall proceed cautiously preparing to stop short of any obstruction at a speed not exceeding 15KMPH when view ahead is clear and 8 KMPH when view ahead is not clear due to curve, obstruction, rain, fog or any other cause until he reaches the foot of the next stop signal and even the signal is "OFF" the Loco Pilot shall continue to look out for possible obstruction short of the same and will act upon its indication only after he has reached it. Before starting, the Loco Pilot shall sound one long whistle which may be repeated as necessary and shall then start his train on receipt of Guard's signal. Thereafter he shall exchange signals with the Guard.

On reaching the block station ahead the Loco Pilot shall report the failure of the signal to the Station Master. If the telephone is provided at the intermediate Block Stop signal Post is out of order the Loco Pilot will pass the IB signal as per GR 3.75(3) & SR

3.75.02, and on reaching the block station ahead, the Loco Pilot shall report the failure of the signal to the SM, Following train shall not be allowed to leave BMCK unless the complete arrival of the receiving train is certified by the SM on duty at THV under exchange of Private Numbers.

The station Master of the block station working the intermediate block stop signal on becoming aware that such a signal is defective shall, before despatching the train, treat the entire section up to the block station immediately ahead of the intermediate block post as one block section and issue a written authority to the Loco Pilot to pass the defective intermediate Block Stop Signal at "ON" without stopping at the signal in accordance with the procedure prescribed by special instruction.

A written authority as mentioned in GR 3.75(4) shall be in Form T/369[3b] in which the Private Number and identification Number obtained from the station in advance in support of the "Line Clear" shall be recorded. Display of "Proceed hand signal at the foot of defective Intermediate Block Stop Signal may be dispensed with.

[d] However, if the SM on the Block station immediately in rear of an intermediate Block Signal is aware that UP intermediate Block Signal is defective shall before despatching a train verify that all trains which had left his Block Station had arrived complete and intact at THV station by exchanging Private Number with SM/THV and shall follow the resetting procedure mentioned in the Para G(iv). Thereafter Loco Pilot shall be handed over the authority of T-369[3b] to pass IBS Signal at "ON" position where in, the Private Number and identification number obtained for line clear shall also be written. After each such resetting process, next higher number is registered on the veeder Counter and the SM should record this, giving the details of the occasion with timings in the Veeder Counter register kept in the station.

K] **SPECIAL INSTRUCTION IN CASE OF A TRAIN PASSING IBS AT 'ON' POSITION:**

I] In case train run away indication appears the SM of receiving Station shall not turn the block instrument handle to line clear position and SM at sending station shall not take any action to despatch the third train unless the second train which passed the IB signal at 'ON' position has actually arrived complete and is verified by the receiving station.

II] Every case of a train passing IB signal at 'ON' position without strictly following the provision of GR 3.75 should be treated as a breach of block rule by the Loco Pilot and action to be taken accordingly.

III] When train run away indication appears at the despatching Station without any train in the section, then SMs should resort to train run away resetting procedure. If the same could not be reset the IBS system should be treated as failed and Signal Maintainer should be advised. All the subsequent trains shall be Piloted OUT after taking line clear and treating entire section as one Block section as per GR 3.75(4).

IV] Whenever a train after having obtained line clear passes IBS at "ON" position the train run away indication appears at the despatching station and also at receiving station. Under such circumstances no further train shall be allowed in the section till the said train arrives completely at the receiving station and its complete arrival report has been

received at the receiving station supported by Private Number treating the entire block section as single section.

V] If any train passes IB Signal at 'ON' position when there is a train in the Section between IBS and the receiving station, the train run away indication will appear at both receiving and despatching station. Under such circumstances the SM in the receiving station shall not turn the Block instrument to Line Clear position and SM at sending station shall not despatch the 3rd train, unless the 2nd train which passes the IBS at 'ON' position has actually arrived and its complete arrival is verified by the receiving station.

VI] Resetting procedure is to be followed as detailed in Para G(iv) after verifying that the last vehicle of the runaway train has arrived intact and ensured by exchange of private number with the SM of the receiving station.

VII] Whenever a train run away indication appears when there is a train in the section, no further train should be allowed in the section till resetting is done.

VIII] Before any resetting operation is done, the Despatching station should advise the receiving station giving details of the last train that has entered the section and should ensure by exchange of private number that the last train has arrived complete at the receiving station.

Every Case of re-setting shall be entered in a register in the following proforma.

| Date and time | Train No. Last entered the block section | Private No. of station ahead for Complete Arrival of the train Under Col.2 | Veeder Counter No Before resetting operation completed | Train No. Entering Block section Immediately after the resetting operation | Remarks | Signature of SS/SM |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

IX] If resetting is not possible under item as mentioned above, the system should be treated as failed and train will work treating the entire section up to the Block Station immediately ahead of the IBS Post as one block section as per GR 3.75(4).

L] **ACTION TO BE TAKEN WHEN A TRAIN PASSES INTERMEDIATE BLOCK STOP SIGNAL AT 'ON'**

**By SM of receiving Station.**

I] Shall not turn the commutator of the DLBI to "Line Closed" Position Unless the complete arrival of the train which passed IBS at "ON" position is ensured, without any exception even for such a train which leaves the rear station after obtaining line clear and passes IBS at "ON" position, since there is a chance of leaving a vehicle or vehicles in the Axle Counter area where the function of Axle Counter also fail.

II] In case the bottom needle of the SGE type block instrument is in its 'Line closed' position, action should be taken to turn the block instrument commutator to 'TOL' Position vide

BWM 5.16(2)(iv) and must not turn to “Line closed” and then to “Line clear” position unless the train which had passed the “Intermediate Block Stop Signal” at ‘ON’ position arrives complete and its complete arrival is verified by the SM of both the block stations in rear and in advance of the intermediate Block Stop Signal.

IIII) After the complete arrival of the last train, according to the information received vide sub-para (a) above, the SM of the receiving station shall communicate the same to the SM of the sending station supported by a Private Number which shall be acknowledged by the later by issuing Private Number. Thereafter the SM of the despatching station and the SM of the receiving station shall resort to Resetting procedure. This simultaneous operation will cause the ‘counter’ to increase by one count at both the stations and SM shall record the next higher number in the register mentioned for the purpose and details of it.

IV) After completion of resetting procedure and normalization of IBS the SM of the Block Station in rear shall then take steps or authorize Station master of the receiving station supported by a Private Number to normalize the block instrument.

V) In the event of failure of IBS signal in the “OFF” position or fails to go to “ON” position immediately after passage of train, the station master controlling the signal shall take steps to put back the IBS signal to “ON” position and treat IBS signal failed and train shall be despatched treating entire section between his station and station in advance as one Block section.

M] **RUNNING OF MOTOR TROLLEYS ON IBS ZONE**:

i) While allowing motor trolley/4 wheeler tower wagon/material trolley etc., entire section between BMCK-THV shall be treated as one block section and shall be issued T-369 [3B] for passing IBS at “ON” position.

ii) After the complete arrival of the said Motor Trolley/4 wheeler tower wagon/material trolley etc. at the station ahead, Station Master at adjacent station shall exchange Private Number in token of complete arrival and then shall resume normal working by resetting the Axle Counter as stated in the SWR.

iii) Motor Trolleys shall not be allowed on following line clear.

**NOTE:-** Backing of train on the portion of line after passing the intermediate Block Stop signal normally shall not be allowed, However, if it becomes inevitable to back, such backing may be done with great caution as mentioned in SR 3.75.04.

N**] SIGNAL POST TELEPHONE:**

A voice logger telephone with a Press button at the bottom is provided at the foot of IB stop signal post and is meant for Loco Pilot to contact the SS/SM in rear by pressing the button. The Loco Pilot of the train encountering the IB signal at ‘ON’ position shall contact the station in rear to find out the occupancy or otherwise of the block section ahead.

**O] NORMAL POWER SUPPLY TO IBS GOOMTIES:**

Power signaling and interlocking installations and the ancillary field units are fed from the following sources of power supply.

i) Normally AC supply from AT connected to OHE Traction distribution [230 V 50 Hz].

ii) Normal power supply 110VDC to the Signaling & interlocking installation at the IBS is drawn from IPS.

iii) AC supply from AT connected to OHE [Single phase 230 V 50 Hz] to charge the IPS battery i.e. signaling & interlocking system for IBS.
iv) Alternate solar power supply system is provided to the IBS for charging the battery.
v) The minimum backup time of IPS battery is ten hours during failure of AC Power.

## IBS between BMCK - MNGD:

The block section between BMCK and MNGD has been split into two block sections by providing Intermediate Block Stop signals at KM 297.540 [controlled by BMCK station] for DN line and on UP line at KM 297.550 [controlled by MNGD station]. Intermediate Block stop signals are controlled through **Block Panel with SSBPAC(D) (D/L)** at the respective receiving ends.

A) The Block working for section between BMCK and MNGD on UP and DN lines are controlled by the **Block Panel with SSBPAC(D) (D/L)** and are provided at MNGD station and at BMCK station. The UP LSS signal No.45 of MNGD station and DN LSS signal No. 48 of BMCK station are controlled by the clearance of IB section through respective IB section monitoring axle counters and the IB Home signal are controlled in turn through the line clear position of respective Block Panel with SSBPAC(D) (D/L) at the despatching stations.

B) Trains between intermediate block signal to respective Home signal of Station in advance in both the sides are worked by means of Block Panel with SSBPAC(D) (D/L) vide 4.09, 5.07, 14.01 to 14.14 of the G & SR and chapter V of BWM.

C) Last stop signal to the intermediate block stop signal in both the sides are controlled by Digital Axle counters and are worked under absolute block system in terms of G & SR 14.01, 14.13. Indications on VDU provided at BMCK and MNGD stations.

D) **INDICATIONS PROVIDED ON VDU FOR I.B. SECTION:**

The indications of signals, IB and Block sections in both up and down directions are shown in the following table:

**(i) SECTION: BMCK-MNGD**

| SN | Signal Aspect [S-48] | IB Section Indication [48IBXT] | IB Home Aspect [S-50] | Block Section Indication | Remarks. |
|---|---|---|---|---|---|
| 1 | Green | Green illuminated when Section is clear. | - | - | LSS No.48 is taken off to despatch a train up to DN IB Home. |
| 2 | Red | Red illuminated When train enters in to the | - | - | IB Section is occupied. |

| | | | | | |
|---|---|---|---|---|---|
| | | section. | | | |
| 3 | - | - | Green | Green illuminated when Section is clear. | IB Home taken off for train up to Home signal of MNGD |
| 4 | - | - | Red | Red illuminated When train enters in to the section. | Block section is occupied or IB Home signal passed at danger. |

**ii) <u>IB SECTION:MNGD-BMCK</u>**

| SN | Signal Aspect [S-45] | IB Section Indication [45 IBXT] | IB Home Aspect [S-49] | Block Section Indication | Remarks. |
|---|---|---|---|---|---|
| 1 | Green | Green illuminated when Section is clear. | - | - | LSS No.45 of MNGD is taken off to despatch a train up to UP IB Home. |
| 2 | Red | Red illuminated When train enters in to the section. | - | - | IB Section is occupied. |
| 3 | - | - | Green | Green illuminated when Section is clear. | IB Home taken off for train up to Home signal of BMCK |
| 4 | - | - | Red | Red illuminated When train enters in to the section. | Block section is occupied or IB Home signal passed at danger. |

**E) Buzzer/Bell**:

One audio buzzer is provided in the VDU at MNGD to detect train Entering section for outgoing trains. After train passes the intermediate block stop signal, the buzzer/bell will start ringing on VDU at MNGD station. On hearing the buzzer/bell the SM must acknowledge the same by pressing on train entering section [TES] muting button to stop the buzzer/bell and then send train entering section report to the SM of the station in advance who shall acknowledge the buzzer in Block Panel with SSBPAC(D) (D/L) train entering section following the procedures laid down vide Block Working Manual.

F) In the event of failure of I.B. track circuit [i.e. track clear indication not available] which shall not permit taking 'OFF' last stop signal, it should be ensured by SM on duty at the despatching station through exchange of private number with the SM of the receiving station that the last train that passed the last stop signal of his station has fully arrived at receiving station, before allowing the next train to enter in to the section, such permission to the next train shall be granted and the section MNGD-BMCK shall be treated as single section.

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By issuing the pilot memo when normalization of the system is not possible. in such case, line clear has to be taken on Block Panel with SSBPAC(D) (D/L), trains are to be despatched from the station only after obtaining line clear till such time IB track circuit is restored to normal.

**SUSPENSION/CLOSURE OF INTERMEDIATE BLOCK POST**

In the event of suspension of Block Panel with SSBPAC(D) (D/L) or Failure/ Suspension of Intermediate Block Home or failure of track circuits beyond the Intermediate Block Signal on UP or DN line or failure of Axle counter, the concerned section shall be suspended, the intermediate Block Post concerned shall be deemed to be closed and section between the stations on either side of the Intermediate Block Post concerned shall be treated as one block section. Refer to General Rule No. 3.70 and 3.75. The authority to pass the Advanced Starter and Intermediate Block Stop Signal concerned at 'ON' shall be issued by the SM immediately in rear of such signal.

## G) NORMALIZATION OF THE TRACK SECTION AND OF BLOCK WORKING BY RESETTING FEATURE:

i) No train should be allowed to leave station in any particular direction unless I.B. track clear indication is available for the relevant track circuited portion of I.B. section and last stop signal cannot be taken off.

ii) A Resetting arrangement for the resumption of I.B. Axle counter under failure condition through co-operative features of both the SM on duty at either end station of the Block section is provided, which should only be resorted to after the train that was lastly sent arrives fully at the receiving station and is certified in this respect by the SM at the receiving station through exchange of private number.

iii) For monitoring of I.B. section working & re-setting of I.B. Axle counters, Track Indications and Re-setting arrangements are provided with button icon on the VDU at MNGD station and on the VDU at BMCK station. Counters are also provided for the purpose of recording the re-settings for the I.B. Axle Counters in case of failures in IB section.

iv) The SS/S.M on duty at both the station shall maintain a separate register for use of resetting at IB Axle Counters wherein every operation of the resetting button shall be recorded giving details of date of use, train, number, time, number registered in the counter on VDU and reasons for resetting and initial each such entry.

The procedure for resetting of the I.B. Axle counters shall be as follows:

**SECTION: MNGD – BMCK ON UP LINE**:

| | **DESPATCHING STATION [MNGD]** | | **RECEIVING STATION [BMCK]** |
|---|---|---|---|
| 1 | SM on duty shall call the attention of SM of BMCK station through Telephone for re-setting I.B. Axle counter zone giving details of last train left the station into the section. | 1 | SM on duty at BMCK after verifying that the said despatched train arrives fully, shall exchange private number with SM on duty at MNGD and gives permission to re-set by clicking the 'Permission Granting' icon provided on the VDU. After clicking of push |

| | | | |
|---|---|---|---|
| | | | button, a popup menu will appear consists of “Permission granting” and “Permission restore”. Click “Permission granting” option. SM will find a “Yellow” color indication above the push button.<br><br>For each such operation the permission granting counter provided in the VDU shall increase by one digit.<br><br>SM on duty shall make an entry of changed permission granting counter number in counter register. |
| 2 | On getting permission to reset from BMCK, a flashing indication will appear on VDU (Permission received from BMCK) above permission acknowledgement button which shall be acknowledged by SM on duty by clicking “Permission received from BMCK acknowledgement button icon and flashing indication will become steady.<br><br>On duty SM at MNGD will then insert the IB reset key. Then the SM will press the IB reset button icon appearing on the VDU for getting IB axle counter to be reset. After applying resetting on doing the above process for resetting of the IB axle counter first train has to be piloted. On passing of the first piloted train IB axle counter will get reset.<br>In case train passed at danger, the aforesaid resetting procedure is to be carried out and no need of first train piloting.<br>For each such operation the IB reset counter provided in the panel shall increase by one digit.<br>SM on duty shall make an entry of changed resetting counter number in resetting register. | 2 | SM on duty at BMCK shall withdraw the permission by clicking the “permission granting” button icon provided on the VDU. After clicking of push button icon, a popup menu will appear consist of ‘Permission Granting’ and “permission restore”.<br><br>Click “permission restore” option the yellow colour indication above the push button will goes blank. |

**SECTION: BMCK – MNGD ON DN LINE:**

| | **DESPATCHING STATION [BMCK]** | | **RECEIVING STATION [MNGD]** |
|---|---|---|---|
| 1 | In case of failure of axle counter between IB signal and receiving station, SM on duty of receiving station, after verifying that the last train has arrived fully shall call the attention of the SM of sending station through telephone giving details of last train left the station into the section has arrived complete and exchange private number with SM on duty of sending station and ask for granting permission for resetting of the LVV. | 1 | SM on duty at sending station shall give permission to reset by clicking on the 'Reset Permission Button' icon provided on the VDU. Then a yellow indication will appear near the icon. |
| 2 | On getting permission to reset from sending station, a flashing green indication will appear on Permission Received icon which shall be acknowledged by SM on duty by acknowledging 'Permission Ack. Button' icon and then flashing green indication will become steady.<br>On duty SM at receiving station shall then make IB Reset 'key IN' on the VDU and then click 'PRESS' on the 'Reset Push Button' icon. Approximately after 5 seconds click the 'RELEASE' on the reset button icon and then make the reset 'key OUT'. On doing the above resetting process, preparatory reset indication will appear on VDU.<br>T/369(3b) shall be issued to loco pilot of first train to pass IBS at ON. On passing of the first train LVV Axle counter will get reset.<br>For each such operation, the LVV reset counter provided shall increase by one count. SM on duty shall make an entry of changed Reset counter number in re-setting register. | 2 | SM on duty at sending station shall give permission to reset by clicking on the 'Reset Permission Button' icon provided on the VDU. Then a yellow indication will appear near the icon.<br>For each such operation, the LVV reset counter provided shall increase by one count. SM on duty shall make an entry of changed Reset counter number in re-setting register. |

**H) <u>DESPATCH OF TRAINS</u>:**

Despatch of trains is governed by the provision of GR 3.42, 3.70 & SR there to and Block working manual rules. For despatching trains with last vehicles/trains without

guard/banking engine in rear, JPO and safety circulars issued along with relevant GR & SRs to be followed.

**From BMCK towards MNGD**.
Train will be despatched in accordance with the General Rules 3.42, 3.70., 3.75, 4.35 and 8.01 and subsidiary Rules thereto.

**BMCK TO IBS ON DN LINE:**
The SM on duty shall ensure that the portion of line between Advanced Starter and 400 Mtrs beyond IBS at their respective ends is clear of obstruction and indication to this effect is available and shall also ensure any non-isolated shunting at their respective ends suspended and shunting authority issued if any is withdrawn and kept in his custody.

**IBS SIGNAL TO MNGD:**
The SM on duty BMCK shall obtain line clear through Block Panel with SSBPAC(D) (D/L) from station in advance (MNGD) to despatch a train in to section and pass the IBS signal through by taking off the IBS signal no. 50 of BMCK for DN line.

After the train passes the DN IBS a buzzer will ring at both the receiving and despatching stations. On hearing the buzzer/bell the SM must acknowledge the same by pressing train entering section [TES] muting icon to stop the buzzer/bell and then send train entering section report to the station master of the station in advance who in turn will acknowledge train entering section. After despatch of a train from BMCK into the Block section, in case when the intermediate stop signal is not taken 'off' but the buzzer has started ringing, this may be either due to the train passing intermediate Block stop signal at 'ON' position or due to failure of the track circuit in advance of that Intermediate Block Signal. The SM on duty will then inform the matter to SCR on duty and concerned S&T official.

The above procedure must be rigidly followed irrespective of the fact whether line clear for train has been received from station in advance or not and this must be recorded in the Train Signal Register and SM's diary book of both the Stations.

**I) DESPATCH OF TRAINS TOWARDS MNGD STATION IN CASE OF FAILURE OF THE DN ADVANCE STARTER SIGNAL DUE TO FAILURE OF "IB AXLE COUNTER" DEVICE OR OTHERWISE-**

If the failure of the DN Advanced starter of BMCK due to the failure of IB axle counting device or the indication showing 'Red' light either due to power failure or due to any other cause, the SM should resort to the resetting procedure mentioned in Para G(iv).

If it is not possible to restore normal working of the IBS by use of the resetting procedure, the ESM-in-charge of the section shall be served with a written memo to attend the defective signal and rectify the same. The ESM-in-charge of the section on being served with a memo by the SM shall attend the failure and rectify the fault. The ESM after ensuring that all S&T gears relating to defective signal have been attended to and are in working order except the axle counter which needs re-setting, shall establish communication with SM concerned and ask him to reset the IB axle counter by

following the reset procedure mentioned in the Para G(iv). SM on duty shall follow the resetting procedure after ensuring that all the trains which had left his Block Station had arrived complete and intact at MNGD (by exchanging of PN with SM/MNGD confirming this) for resumption of normal working.

## J) DESPATCH OF TRAINS IN CASE OF FAILURE OF INTERMEDIATE BLOCK STOP SIGNAL:

[a] When a Loco Pilot finds an intermediate Block Stop signal at 'ON' Position he shall stop his train in rear of the signal and advise the guard of the fact by sounding long continuous whistle and shall then contact the Station Master of the Block Station in rear over the signal post telephone provided for the purpose vide SR.3.75.01[i].

[b] If the SM of BMCK station, on being contacted over Telephone by the Loco pilot, finds that the signal is defective, he shall, after obtaining "Line Clear" for the train from the station in advance, authorize the Loco Pilot on the telephone to pass intermediate Block Signal at "ON" and enter the block section ahead. He shall give Loco Pilot the Private Number and identification Number under which he has received "Line Clear" for the train from the station in advance.

The Loco Pilot shall then sound one short, one long and one short whistle and, on receipt of Guard's signal shall proceed ahead duly exchanging signals with him. The station Master on being contacted by the Loco Pilot on signal post telephone if he is unable to obtain "Line Clear" for the train due to total interruption of communications, shall call for the Guard through the Loco Pilot and on being contacted by guard, he shall advise the guard of the circumstances and give a Private Number for the train to proceed up to the next block station. The guard shall prepare a memo in duplicate authorizing the Loco Pilot to proceed with the Private Number received from the Station Master. In such case the speed of the train shall be restricted as prescribed in GR 3.75(3).

[c] In such case the Loco Pilot shall pass the IB signal at "ON" and proceed cautiously and be prepared to stop short of any obstruction, at a speed not exceeding 15 Kilometers an hour if he has a good view of the line ahead otherwise, at a speed not exceeding 8 kilometers an hour and report the failure to the Station Master at the block station ahead.

While complying with the instructions contained in GR 3.75(3), when the Loco Pilot has to pass IB signal at "ON" after waiting for 5 minute at the signal, he shall proceed cautiously preparing to stop short of any obstruction at a speed not exceeding 15KMPH when view ahead is clear and 8 KMPH when view ahead is not clear due to curve, obstruction, rain, fog or any other cause until he reaches the foot of the next stop signal and even the signal is "OFF" the Loco Pilot shall continue to look out for possible obstruction short of the same and will act upon its indication only after he has reached it. Before starting, the Loco Pilot shall sound one long whistle which may be repeated as necessary and shall then start his train on receipt of Guard's signal. Thereafter he shall exchange signals with the Guard.

On reaching the block station ahead the Loco Pilot shall report the failure of the signal to the Station Master. If the telephone is provided at the intermediate Block Stop signal Post is out of order the Loco Pilot will pass the IB signal as per GR 3.75(3) & SR 3.75.02, and on reaching the block station ahead, the Loco Pilot shall report the failure

of the signal to the SM. Following train shall not be allowed to leave BMCK unless the complete arrival of the receiving train is certified by the SM on duty at MNGD under exchange of Private Numbers.

The station Master of the block station working the intermediate block stop signal on becoming aware that such a signal is defective shall, before despatching the train, treat the entire section up to the block station immediately ahead of the intermediate block post as one block section and issue a written authority to the Loco Pilot to pass the defective intermediate Block Stop Signal at "ON" without stopping at the signal in accordance with the procedure prescribed by special instruction.

A written authority as mentioned in GR 3.75(4) shall be in Form T/369[3b] in which the Private Number and identification Number obtained from the station in advance in support of the "Line Clear" shall be recorded. Display of "Proceed hand signal at the foot of defective Intermediate Block Stop Signal may be dispensed with.

[d] However, if the SM on the Block station immediately in rear of an intermediate Block Signal is aware that DN intermediate Block Signal is defective shall before despatching a train verify that all trains which had left his Block Station had arrived complete and intact at MNGD station by exchanging Private Number with SM/MNGD and shall follow the resetting procedure mentioned in the Para G(iv). Thereafter Loco Pilot shall be handed over the authority of T-369[3b] to pass IBS Signal at "ON" position where in, the Private Number and identification number obtained for line clear shall also be written. After each such resetting process, next higher number is registered on the veeder Counter and the SM should record this, giving the details of the occasion with timings in the Veeder Counter register kept in the station.

K] **SPECIAL INSTRUCTION IN CASE OF A TRAIN PASSING IBS AT 'ON' POSITION:**

I] In case train run away indication appears the SM of receiving Station shall not turn the block instrument handle to line clear position and SM at sending station shall not take any action to despatch the third train unless the second train which passed the IB signal at 'ON' position has actually arrived complete and is verified by the receiving station.

II] Every case of a train passing IB signal at 'ON' position without strictly following the provision of GR 3.75 should be treated as a breach of block rule by the Loco Pilot and action to be taken accordingly.

III] When train run away indication appears at the despatching Station without any train in the section, then SMs should resort to train run away resetting procedure. If the same could not be reset the IBS system should be treated as failed and Signal Maintainer should be advised. All the subsequent trains shall be Piloted OUT after taking line clear and treating entire section as one Block section as per GR 3.75(4).

IV] Whenever a train after having obtained line clear passes IBS at "ON" position the train run away indication appears at the despatching station and also at receiving station. Under such circumstances no further train shall be allowed in the section till the said train arrives completely at the receiving station and its complete arrival report has been received at the receiving station supported by Private Number treating the entire block section as single section.

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V] If any train passes IB Signal at 'ON' position when there is a train in the Section between IBS and the receiving station, the train run away indication will appear at both receiving and despatching station. Under such circumstances the SM in the receiving station shall not turn the Block Panel to Line Clear position and SM at sending station shall not despatch the 3rd train, unless the 2nd train which passes the IBS at 'ON' position has actually arrived and its complete arrival is verified by the receiving station.

VI] Resetting procedure is to be followed as detailed in Para G(iv) after verifying that the last vehicle of the runaway train has arrived intact and ensured by exchange of private number with the SM of the receiving station.

VII] Whenever a train run away indication appears when there is a train in the section, no further train should be allowed in the section till resetting is done.

VIII] Before any resetting operation is done, the Despatching station should advise the receiving station giving details of the last train that has entered the section and should ensure by exchange of private number that the last train has arrived complete at the receiving station.

Every Case of re-setting shall be entered in a register in the following proforma.

| Date and time | Train No. Last entered the block section | Private No. of station ahead for Complete Arrival of the train Under Col.2 | Veeder Counter No Before resetting operation completed | Train No. Entering Block section Immediately after the resetting operation | Remarks | Signature of SS/SM |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

IX] If resetting is not possible under item as mentioned above, the system should be treated as failed and train will work treating the entire section up to the Block Station immediately ahead of the IBS Post as one block section as per GR 3.75(4).

## L] ACTION TO BE TAKEN WHEN A TRAIN PASSES INTERMEDIATE BLOCK STOP SIGNAL AT 'ON'

**a) By SM of receiving Station.**

I] Shall not turn the Block Panel to "Line Closed" Position Unless the complete arrival of the train which passed IBS at "ON" position is ensured, without any exception even for such a train which leaves the rear station after obtaining line clear and passes IBS at "ON" position, since there is a chance of leaving a vehicle or vehicles in the Axle Counter area where the function of Axle Counter also fail.

II] In case the bottom needle of the SGE type block instrument is in its 'Line closed' position, action should be taken to turn the block instrument commutator to 'TOL' Position vide BWM 5.16(2)(iv) and must not turn to "Line closed" and then to "Line clear" position unless the train which had passed the "Intermediate Block Stop Signal" at 'ON' position arrives

complete and its complete arrival is verified by the SM of both the block stations in rear and in advance of the intermediate Block Stop Signal.

III] After the complete arrival of the last train, according to the information received vide sub-para (a) above, the SM of the receiving station shall communicate the same to the SM of the sending station supported by a Private Number which shall be acknowledged by the later by issuing Private Number. Thereafter the SM of the despatching station and the SM of the receiving station shall resort to Resetting procedure. This simultaneous operation will cause the 'counter' to increase by one count at both the stations and SM shall record the next higher number in the register mentioned for the purpose and details of it.

IV] After completion of resetting procedure and normalization of IBS the SM of the Block Station in rear shall then take steps or authorize Station master of the receiving station supported by a Private Number to normalize the block instrument.

V] In the event of failure of IBS signal in the "OFF" position or fails to go to "ON" position immediately after passage of train, the station master controlling the signal shall take steps to put back the IBS signal to "ON" position and treat IBS signal failed and train shall be despatched treating entire section between his station and station in advance as one Block section.

M] **RUNNING OF MOTOR TROLLEYS ON IBS ZONE**:

i) While allowing motor trolley/4 wheeler tower wagon/material trolley etc., entire section between MNGD-BMCK shall be treated as one block section and shall be issued T-369 [3B] for passing IBS at "ON" position.

ii) After the complete arrival of the said Motor Trolley/4 wheeler tower wagon/material trolley etc., at the station ahead, Station Master at adjacent station shall exchange Private Number in token of complete arrival and then shall resume normal working by resetting the Axle Counter as stated in the SWR.

iii) Motor Trolleys shall not be allowed on following line clear.

NOTE:- Backing of train on the portion of line after passing the intermediate Block Stop signal normally shall not be allowed, However, if it becomes inevitable to back, such backing may be done with great caution as mentioned in SR 3.75.04.

N**]** **SIGNAL POST TELEPHONE:**

A voice logger telephone with a Press button at the bottom is provided at the foot of IB stop signal post and is meant for Loco Pilot to contact the SS/SM in rear by pressing the button. The Loco Pilot of the train encountering the IB signal at 'ON' position shall contact the station in rear to find out the occupancy or otherwise of the block section ahead.

**O] NORMAL POWER SUPPLY TO IBS GOOMTIES:**

Power signaling and interlocking installations and the ancillary field units are fed from the following sources of power supply.

i) Normally AC supply from AT connected to OHE Traction distribution [230 V 50 Hz].

ii) Normal power supply 110VDC to the Signaling & interlocking installation at the IBS is drawn from IPS.
iii) AC supply from AT connected to OHE [Single phase 230 V 50 Hz] to charge the IPS battery i.e. signaling & interlocking system for IBS.
iv) Alternate solar power supply system is provided to the IBS for charging the battery.
v) The minimum backup time of IPS battery is ten hours during failure of AC Power.