NORTH CENTRAL RAILWAY

उत्तर मध्य रेलवे

AGRA DIVISION

आगरा मंडल

STATION WORKING RULE

स्टेशन संचालन नियम

AGRA CANTT STATION

01

आगरा कैंट स्टेशन

NORTH CENTRAL RAILWAY
AGRA DIVISION

SWR NO: AGRA/01

AGRA CANTT. (B.G.)

NOTE:
The Station Working Rules 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. STATION WORKING RULE DIAGRAM :-

The track accommodation is as shown in the Station Working Rule North Central Railway Diagram No SWRD-A-120/R dated 05.07.2023..... & based on SIP no. ....SIP.NCR.AGC.AGC.01...CUT-1 Dated - 18.08.2023 AGC Station TWRD NO.....

2. DESCRIPTION OF STATION :-

2.1 GENERAL (LOCATION)

AGRA CANTT. is a "SPL"class station interlocked to Standard-III interlocking. On the Jhansi-Delhi Double line electrified section at kms. 1343.27 from CSTM of North Central Railway on A route. Route setting Electronic Interlocking with Multiple Aspect Color Light Signaling, electrically operated points and complete track circuiting worked from a central Local control operating panel or VDU.

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

i) **RKM STATION :**
RKM is situated at a distance of 3.68 Kms Km towards NDLS. The UP & DN Main line Automatic/Modified Automatic signaling system with Axle Counters/DC tack circuit are provided between AGC & RKM stations.

ii) **BHA STATION :**
BHA is situated at a distance of 10.28 Kms Km towards JHS. The UP & DN Main line Automatic/Modified Automatic signaling system with DUAL Axle Counters are provided between AGC & BHA stations and the block section is divided into various automatic signaling sections.

iii) **IDH STATION :**
IDH (N.C. Rly) is situated at a distance of 2.41 Km towards TDL.

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This section is a single line section fully track circuited and trains are worked through inter-cabin slotting between AGC-IDH.

iv) **NJPC STATION :**
NJPC (N.C. Rly) is situated at a distance of 2.00 Km towards BKI/BXN .
This section is a single line section fully track circuited and trains are worked through inter-cabin slotting between AGC-NJPC.

2.2.1 **Adjoining 'D' Class Station:** ---N I L---

2.2.1 **Adjoining 'DK' Class Station:** ---N I L---

2.3 **BLOCK SECTION LIMITS ON EITHER SIDE OF STATION ON DIFFERENT ROUTES:**

2.3.1 **ON TRUNK-ROUTE---DOUBLE LINE WITH AUTOMATIC SIGNALLING SECTION TOWARDS BHA:**
BLOCK SECTION for DN & UP Main line between AGC-BHA is not applicable since the limit of an automatic signaling section is the portion of running line between two consecutive stop signals.

a. Automatic block section between BHA-AGC on DN main line :-

i. DN Semi Automatic Advance Starter Signal no. 35 of BHA to an adequate distance beyond DN Automatic Signal A510 on DN Main Line.

ii. DN Automatic Signal A510 to an adequate distance beyond down automatic signal no. A508 on down main line.

iii. DN Automatic Signal A508 to an adequate distance beyond down Semi automatic signal no. A506(FOG Signal) on down main line.

iv. Down Semi automatic signal no. A506(FOG Signal) to an adequate distance beyond down automatic signal no. A504 on down main line.

v. Down automatic signal no. A504to an adequate distance beyond down Semi automatic signal no. A502 of LC-493 on down main line

vi. Down Semi automatic signal no. A502 of LC-493 to an adequate distance beyond Down Semi automatic Home Signal No. S-2 of AGC on down main line.

b. Automatic block section between AGC-BHA on UP Main Line:-

i UP Semi Automatic Advance Starter Signal no. S-3 of AGC to an adequate distance beyond UP Semi automatic signal no A-513 of LC-493 on UP Main Line.

ii. UP Semi automatic signal no A-513 of LC-493 to an adequate distance beyond UP automatic signal no. A515 on UP Main Line.

iii. UP automatic signal no. A515 to an adequate distance beyond UP Semi Automatic Signal A-517(FOG Signal) on Up Main Line.

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iv. UP Semi automatic signal no A-517(FOG Signal) to an adequate distance beyond UP automatic signal no. A521 on UP Main Line.

v. UP automatic signal no. A521 to an adequate distance beyond Semi automatic UP Home Signal No. S-2 of BHA on up main line.

2.3.2 ON TRUNK-ROUTE---DOUBLE LINE WITH AUTOMATIC SIGNALLING SECTION TOWARDS RKM:

a. Automatic block section between AGC-RKM on DN main line

Between down advanced starter of AGC No. 98 to automatic Signal No. 134505 with an adequate distance and automatic Signal No. 134505 to Semi automatic DN Home Signal S2 of RAJA-KI-MANDI with an adequate distance on the down line.

b. Automatic Block section between RKM-AGC on Up Main Line.

Between Starter Signal No.S3 of RAJA-KI-MANDI and automatic Signal No.134508 and automatic Signal No. 134508 to Semi automatic UP Home Signal No. 99 of Agra Cantt. Station with an adequate distance on UP Line.

2.3.3 ON SINGLE LINE TOWARDS BKI/BXN BETWEEN AGC - NJPC:

Absolute Block section Lies in between DN Advanced Starter Signal No. 94 of AGC JN. and Up Advance Starter Signal no.1 on BKI line and Up Advance Starter signal No. 3 on BXN line of New Jn.Panel.

2.3.4 ON SINGLE LINE TOWARDS TDL BETWEEN AGC-IDH:

Absolute Block section Lies in between DN Advanced Starter Signal No.96 of AGC & UP Advance Starter Signal No. S6 of Idgah Station.

NOTE:-Automatic sections are provided with track circuiting/Axle counter. Axle counters are installed in advance of every automatic /Semi automatic signal and controlled by Axle counter sub section between two such signals. These automatic / Semi automatic sections comes under the joint control of either side stations only when the Axle counting equipments/ track circuiting or there electrical connections fail.

2.4 GRADIENTS, IF ANY :

On Dn main line There is 1 in 2500 rising gradient at Km. 1337.800 upto Km. 1338.400 further level up to 1339.850 further rising gradient 1 in 1571 up to Km. 1340.900 further rising gradient 1 in 723 upto Km. 1342.200 further falling gradient 1 in 1053 & on Up main line rising gradient 1 in 640 at Km. 1342.200 upto Km. 1340.950 further rising gradient 1 in 1515 upto Km. 1339.950 then level upto Km. 1338.350 further rising gradient 1 in 1512 upto Km. 1337.700. No gradient towards IDH side.

2.5 Layout: The layout of the station is as shown in the SWR diagram.

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2.5.1 Running Lines and their holding capacity:

Passenger lines	**CSR**
Common loop line **Platform No.1(LINE NO1)**	**645m**
Up Main line. **(LINE NO2)**	**710m**
Down Main line **(LINE NO3)**	**850m**
Common loop line No.2 **Platform No.2(LINE NO4)**	**860m**
Common platform line No.3 **(LINE NO5)**	**758m**
Common platform line No.4 **(LINE NO6)**	**642m**
Common platform line No.5 **(LINE NO7)**	**800m**
Bay platform line (Platform No.6)	**287m**
Waiting Bay Line	**707m**
Goods Lines	
UP/DN R&D Line No.1	**686m**
UP/DN R&D Line No.2	**686m**
UP/DN R&D Line No.3	**686m**
UP/DN R&D Line No.4	**800m**
UP/DN R&D Line No.5	**670m**
UP/DN R&D Line No.6	**670m**
UP/DN R&D Line No.7	**770m**
UP/DN R&D Line No.8	**770m**
UP/DN R&D Line No.9	**780m**

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2.5.2 Sidings and Non-Running Lines (As per SIP) :

	Siding Lines	
1	Shunting neck on BHA side of yard	697m
2	Engine siding (JHS End PF no. 02)	65m
3	Double entry ART siding (JHS End)	300m
4	Double entry Medical van siding(JHS End PF no. 03)	75m
5	Washing pit cum inspection pit lines(2 lines)	620m (Each)
6	Saloon siding (JHS End PF no. 01)	52m
7	Tower Wagon Shed siding (JHS End PF no. 01)	36m
8	Sick sidings (3 lines)	145m 145m 180m
9	Oil siding (Near sick depot)	80m
10	A & D Siding taking OFF from common platform line No.4 on North end of platform No.4 (MTJ End)	97m
11	Loading unloading siding	95m
12	Carriage siding (MTJ End PF no. 01)	130m
13	Bay loop line	186m
14	Stabling sidings (IDH End below Bay loop line) Stable siding	95m 70m
15	MMU siding	135m
16	A & D Siding Taking OFF from BXN branch line	50m
19	Washing pit line (MTJ End)	450m
17	Stabling line (MTJ End)	431m
18	Washing line (MTJ End)	278m

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2.5.3 ANY ABNORMAL FEATURES IN THE LAYOUT :- *NIL*

Gate No.	493	494
Class	'C' Class	'C' Class
Engg / TFC	Engg	Traffic
Section	AGC-BHA	AGC-BHA
Kms	1340.029 (1340/02-04)	1341/12-14
Normal Position	Open	Open
Leaves/L.B.	P/Operation L.B. with Sliding boom	P/Operation L.B. Sliding Boom
INT/N.I	INT	INT
Telephone with	Central Cabin AGC	Central Cabin AGC
Operated By:	Engg. Gateman	Traffic. Gateman

2.6 LEVEL CROSSINGS GATE:

NOTE:- For detailed instructions for working of level crossing gates. See appendix 'A'

2.7 Special Feature:

a CRS's special sanction is obtained in terms of para 3.07 (7) of G&SR for combining the following signals (**Sanction No. 20-B/800/AGC,PI dated 16.09.2014**)

i) DN Advance Starter signal No. 96 of AGC with DN distant of IDH

b. CRS's special sanction is obtained in terms of para 3.40 (1) (b) & (4) of G&SR for reckoning adequate distance 120 m from foot of the following signal numbers. (**Sanction No. 20-A/800/AGC, PI dated 15.09.2014**)

i) 34,36,38,40,42,44,46,48,50,68,72,74,76 & 60 for DN direction

ii) Signal No. 23,31,35,37,41,43,53,55,57,59,61,63,65, & 67 for UP direction.

c) Reckoning adequate distance 100 m from foot of the UP signal NO. 51. **(Sanction No. 83/800/AGC/Agra/Pt.I dated 15.09.2014)**

3. SYSTEM AND MEANS OF WORKING

(A) **ON DOUBLE LINE** :-

(i) BETWEEN AGC AND RKM :-

Trains are worked in accordance with General and subsidiary rules, Chapter IX under Automatic Block System or Modified Automatic signaling (G.R.9.01(3) & (4)). Direct telephonic communication is provided between AGC and RKM for working of trains on UP & DN main lines. The entry of Down trains into automatic signalling sections is controlled by Semi-automatic Down Advanced starter signal No. 98 of AGC. Like wise the movement of UP trains from RKM

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in UP direction by Up line is controlled by Semi Automatic UP starter signal no. 3 of RKM. The details of train working are given in Appendix `H-2' to SWRs.

(ii) **BETWEEN AGC- AND BHA:-**

Trains are worked in accordance with General and Subsidiary Rules, Chapter IX under Automatic Block System or modified Automatic signaling(SR9.01/10(i). Direct telephonic communication is provided between AGC and BHA for working of trains. The entry of up trains into automatic signalling sections is controlled by semi-automatic up Advanced starter signal No. 1 of AGC. Likewise the movement of Down trains from BHA in down direction by Down line is controlled by Semi Automatic Down Advanced starter signal no S36. The details of train working are given in Appendix H-1 to SWRs.

(B) **ON SINGLE LINE** :-

(i) TRAIN WORKING BETWEEN AGC-NJPC TOWARDS BKI/BXN LINE :-

In this section trains are worked on absolute block system with continuous Track circuiting by means of DC track circuiting/Axle counter, Slotting and station to station telephone is provided in SM's office for working of trains in between AGC-NJPC (SINGLE LINE) section on BXN/BKI line.

(ii) TRAIN WORKING BETWEEN AGC-IDH TOWARDS TDL LINE :-

In this section trains are worked on absolute block system with continuous Track circuiting by means of DC track circuiting/Axle counter, Slotting and station to station telephone is provided in SM's office for working of trains in between AGC-IDH (SINGLE LINE) section .

4.0 SYSTEM OF SIGNALLING AND INTERLOCKING:

4.1 The Station is provided with Solid State Interlocking & LCP/VDU and is equipped with electric point machine operated points and multiple aspect colour light signals interlocked to **Standard III.** In accordance with Chapter III of the General and Subsidiary rules, all the points (except hand operated points) and signals are worked from the LCP / VDU , which is provided in Station Master's Office by Station Master on duty. A complete yard layout diagram along with point, signals and track circuits depicted on LCP /VDU Screen is provided in SM's Office DC Track Circuits/Axle counters, Level Crossing Gates available in Station Section are also depicted on the LCP /VDU screen.
A separate auto block EI Local control panel in the form of VDU with standby arrangement is provided with **SM/AGC** for monitoring of auto Signaling towards BHA side of Station . The local control panel (VDU Auto Block EI) depicts the occupancy / vacancy of Axle Counter and Signal aspects either side Automatic

Block Sections under control of the station & can perform resetting of Axle counters under his control when both Axle counter of same track section fail at a time through the VDU (Auto Block El).

The combined control Panel ,VDU and illuminated diagram have been provided in the SM's office .

The Operating panel , VDU depicts the schematic reproduction of the entire track lay out of the area controlled by panel/VDU. All points and signals are geographically depicted on the operating panel/VDU.

All the points, signals and controls are operated by means of push buttons located within the track layout diagram on the panel at their respective geographical position. Common group buttons/Commands, emergency operation buttons/Commands etc., are appropriately placed on the pane/VDU. SM in central cabin operates signals by pressing signal button and concerned route button simultaneously and release on the Panel OR by giving concern signal Command through Mouse on VDU.

Indications, regarding setting of the points and setting of the route and signal aspects, controls given and received are given on the Indication panel/VDU. Indications of points, signals, track circuits / axle counter, Controls, slots etc., are provided on indication panel/VDU. Different track circuit/Axle counter sections being painted in different colors in geographical layout.

The Operating panel/VDU are also equipped with SMs lock up key to enable the ASM on duty to lockup the panel/VDU. The SM on duty must not permit any unauthorized persons to operate the control panel/VDU and must lock the panel/VDU whenever he leaves his seat.

Followings Indications are provided on Panel /VDU.

(i) 'OFF' & 'ON' position of signals.
(ii) 'Normal & 'Reverse' position of points
(iii) Clear & occupied status of track circuited portion .
(iv) 'Free' & 'Locked position of crank handles.
(v) 'Open & 'Close' condition of level crossing.
(vi) The detail operations of VDU are provided in the manual.

(vii) All the points of the yard are worked by Electric point machines (except non interlocked hand points connected with Washing pit lines, Sick lines, Saloon SDG,T.W. Shed, Loading /Unloading & Stabling SDG). The interlocking and their working have been given in appendix 'B' of these Station Working Rules.
(viii) The interlocking between points and signals is achieved electronically through microprocessor based set up with flexibility in individual operation.
(ix) Block working on either side working in "Normal" Mode or "Modified Automatic Signalling" mode.

4.1.1 UP & DN Main Line Advanced Starter, Starter & Home Signals are semi automatic signals. All these signals can be kept in Auto mode or manual mode.

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In auto mode, route for these signals is locked always and the aspects of the signals change as per the train movement and aspects of signals ahead.

4.1.2 A separate LCP/VDU is provided for operation of all signals, points and control of Level Crossing Gates. All the points are electrically operated points which get automatically set for the required route when the concerned berthing and destination track circuit options (refer Manual for working of SSI Station through LCP/VDU) are clicked one by one through VDU or pressing concern signal & route Buttons . This will set and lock the points and then the relevant signal comes OFF. In case the signal fails to come OFF, then the point positions shall be checked by the indications provided. In case point / points over the required route fail to set automatically, these shall be set by individual operation of each point. If the points still fail to be set individually, these can be set to the desired position by hand cranking process. In case required signal fails to come OFF even after individual operation of each point or by hand cranking, the relevant signal shall be treated as defective and action shall be taken for passing trains on defective signals.

4.1.3 **ROUTE LIGHTS:**

UP & Down main lines from respective Home signals to Advanced Starter signals including point zone at East and West end are track circuited and divided into a number of track circuits as shown on the INDICATION PANEL/VDU screen. On the INDICATION PANEL/VDU screen, each track-circuited portion is provided with no light (if not occupied and no route set), yellow flashing (if route set command is issued), steady yellow (if route set and locked) and red (track occupied) indications. The function and indication of route lights is detailed in Appendix `B' to these rules.

4.1.3 **ROUTE RELEASE:**

On appearance of route lights for a movement to be made, all the concerned points get locked and cannot be operated. As soon as the train passes ahead, and occupies the track circuits ahead of the signal controlling that movement, the yellow lights of that track circuit will extinguish and red light will appear. As the train passes ahead and clears the track circuits coming on route, red light will disappear and route (yellow) light will reappear successively. On completion of the movement these yellow route lights in rear of the train will disappear automatically. Disappearance of these yellow lights in rear of the train will make the points in rear of the train free to be altered for another following movement. The portion of the berthing track will remain occupied and will show clear automatically only after the same has been cleared by the train.

4.1.4 **CANCELLATION OF MOVEMENT:**

In case a signal has been taken 'OFF' for a movement, but due to any reason it is required to cancel the movement

SM on duty will click the 'Signal Cancel' option in Signal menu through VDU and the signal will go back to `ON' at once. Click the 'Route release' option in signal menu OR restore the signal controlling movement over the route to 'ON' by pressing the concerned signal button (GN) along with the emergency signal cancellation button (EGGN) and releasing them then he will press the

concerned signal button , emergency route release button (EUUYN) simultaneously and release(EUUYN),keeping concerned signal button (GN) pressed ,press concern route button(UN) and release through the operating panel , the route will release immediately if there is no train on the approach track of signal. For those signals where either approach track is not available or it is occupied, the route will remain set and locked and timer will start and after the lapse of 120 seconds the route will get released and counter will register one count.

The SM on duty will record every such cancellation of movement in a register maintained for this purpose.

After every cancellation of such a movement the counter will register next higher reading. The S.M. on duty will record the counter reading before cancellation of the movement, the movement cancelled, time of cancellation, counter reading after cancellation of the movement in the register on the Performa as given in Appendix "B" to these rules.

4.1.5 **COUNTERS:**

The operation of the following counters shall be recorded on respective counter register by SM on duty after reading verified with physical counter box on the Performa given in Appendix B to these rules.

(a) CALLING ON SIGNAL COUNTER:

(b) EMERGENCY OVERLAP RELEASE (When point zone track circuit is failed):

(c) ROUTE RELEASE:

(d) EMERGENCY ROUTE RELEASE (One of track circuit in en route has failed):

(e) EMERGENCY POINT OPERATION:

(f) AXLE COUNTER RESET OPERATION (FOR station section)

(g) EMERGENCY CRANK HANDLE RELEASE

(h) AXLE COUNTER RESET OPERATION (for BLOCK section)

(i) UP/DN FOGI SWITCH OPERATION (AGC-RKM & AGC-BHA SECTION)

The counter increments by one count, every operation of resetting should be recorded in separate register kept in the SM office.

4.1.6 **STOP BOARDS:**

Stop boards are provided at the location opposite to shunt signals 125,130,152, 154,169 & 179 indicating "Non-interlocked line/yard begins.

4.1.7 **INDICATIONS OF POINTS:**

Normal and Reverse position of points are indicated near the point on the VDU/Indication panel as detailed in Appendix `B' to these rules.

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4.1.8 **PROVISION OF TRACK CIRCUITS ON RUNNING LINES:**

i) Yard is divided into suitable number of small track circuits (except no-interlocked lines) shown on SWR diagram and demarcated on the VDU panel/Operating panel. Indications for all these track circuits are provided on the VDU panel/Indication panel as per attached diagram.

Complete yard is Track circuited (except non interlocked lines) in redundancy through DC track circuit to MSDAC and MSDAC to MSDAC at this station as per diagram attached.

4.1.9 **CRANK HANDLES (CH):**

Crank Handle key has been provided in Location Boxes at site for manual setting of Motor Operated Points during the failure or maintenance. This shall be kept in a location boxes specially provided for this purpose as detailed in Appendix-'B' to these rules.

4.1.10 **CALLING-ON SIGNAL/ 'A' MARKER/ 'AG' MARKER**

Five Calling-On signals viz. No. C-2 Below DN Home signal No.2 C-4 below DN R/Home signal No. 4,C-99 below UP home signal No. 99 , C-91 below UP Home signal No.S91, C-93 below UP Main line Home Signal No.93 are provided.

"A' marker is provided on UP main line home signal No. 99, ,UP main line starter No.21, UP main line intermediate starter No.5, UP advance starter No. 3,DN main line home signal No.2, DN main line routing home signal No. 4, DN main line starter No. 78, DN main line intermediate starter No.92 & DN advance starter signal No.98. These signals shall work as Automatic stop signal when 'A' marker is lit, otherwise as manual stop signal. Indication of 'A' marker light is provided on the panel/VDU. Illuminated 'AG' marker is provided on S2 & S3.

4.1.11 **SPECIAL SIGNALLING FEATURES SUCH AS FIXED WARNER, STOP BOARDS AT TERMINAL STATIONS**

- NIL –

4.1.12 **EMERGENCY CROSS-OVER**

Emergency crossovers No. 226(DN M/L to UP M/L) is provided in the yard at BHA end and crossovers No. 296 & 294 (UP M/L to DN M/L) are provided in the yard at RKM end

4.1.13 **PERMANENTLY LOCKED POINTS**

- NIL -

4.1.14 **INDICATIONS OF POINTS/ TRAP POINTS/ SIGNAL/ TRACK CIRCUITS**

Indication of Points, Trap points, Signals and Track circuited portions shall be depicted geographically on the LCP/VDU.

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4.1.15 DESCRIPTION OF LCP/VDU PANEL FOR ROUTE SETTING

(i) **Operating panel/VDU:-** All the points and signals can be operated by SM on duty from the Hot standby VDU or Operating panel(LCP)provided in SM's office. All the points, signals and controls are operated through interactive dialogue boxes appearing on the VDU screen OR operated by means of push buttons located within the track layout diagram on the panel at their respective geographical position. Common group buttons, emergency operation buttons etc., are appropriately placed on the panel .

Interlocking between points and signals is achieved electronically (Solid State Interlocking) with operating LCP/VDU. An illuminated diagram of yard controlled by VDU showing the graphical position of points and signals appears on the VDU screen. Normal operation like route setting and point operation are done by selecting options in signal/point/track menus. Emergency relief commands are through two pass command controls provided by VDU or by pressing signal/ shunt signal button and concerned route button simultaneously and release on the panel. Normally all operations are two button operation except Cancellation of route which is a three button operation.

(ii) **Indication Panel:** Indications, regarding setting of the points and setting of the route and signal aspects, controls given and received are given on the Indication panel. Indications of points, signals, track circuits / axle counter, Controls, slots etc., are provided on indication panel. Different track circuit/Axle counter sections being painted in different colours in geographical layout.

4.1.16 STATION MASTER CONTROL

The VDU is provided with password protection SM's can log-in using specific user-id and password & Operating panel is also equipped with SMs lock up key to enable the SM on duty to lockup the panel . Whenever the SM on duty, who conducts all operations, has to leave the VDU / Operating panel even for a short duration shall take this key out from Operating panel after locking the panel or through VDU .

On duty SM's click near SM's Key (shown as Key in Green color) and the menu will be displayed, Click on "Key Out". The extraction of key from the VDU renders the VDU in-operative. The signals taken 'off' and route set prior to the extraction of key shall however, continue to remain in that position.Signals can be put back to 'ON' by Clicking mouse on relevant signals even when the VDU control key is out. To unlock VDU, click near SM's Key (shown as Key in Red color) and the menu will be displayed; Click on "Key in" upon clicking SM's Key (shown as Key in Red color) and the user authentication dialog box will be displayed. On duty SM's will entered the password and click OK, VDU is operative.

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4.1.17 INDIVIDUAL OPERATION OF POINTS

(I) **For every operation of points from the VDU panel**, Right click on near the point, which is to be operated. The Point menu appears. Left- on 'Direction on the menu, on which, a sub-menu appears. Left- 'Free' on the sub-menu and transmit command. Once again follow the same process and this time, Normal or Reverse on the sub-menu and transmit command. Point will move to reverse position and during movement of points, the Point indication will flash. The rectangular dark yellow box-along with steady white indication will appear when the points are set and locked.

(II) **For every operation of points from the Operating panel** individual point button (WN) and point group button 'WWN' should be simultaneously pressed and released which will cause the point to change over, provided the points are not engaged by any route and also the track circuit controlling the point is unoccupied.

4.1.18 OPERATION OF GATES WITHIN THE STATION LIMITS

Whenever the signals are required to be taken off the signal for the reception of a DN/UP train or dispatch of UP/DN train or for shunting across the level crossing gate, the SM on duty shall advise the Gateman at L-Xing no.494 about the number, description and direction and likely time of passage of the train over the level crossing. On receipt of the advice the Gateman will close the gate on time. The indication of gate close will appear on VDU/Indication Panel. Whenever the gate is required to be closed for making rail movement towards or across the level crossing, the gate man on duty after clearing the road traffic, the gateman closes the gate barriers by pressing 'Close' button on his gate-operation panel and on completion of the operation, the gate man on duty will then inform the SM on duty regarding the closing of the gate.

On the Operating Panel, SM on duty will accept the level crossing gate closure, by pressing 494XN button along with Group slot button (GSB). For opening the gate the SM on duty will press 494 XN button and Group slot with drawl button (GSRB) simultaneously ,under advise to the gateman on phone. This will be indicated as "Gate to Open" indication on Gateman control panel. On the appearance of gate open indication on the Gateman control panel , the gate man on duty will operate the button to open the level crossing gate.

On the VDU Panel , SM on duty will accept the level crossing gate closure by the appearance of 'LX LOCK' steady green text on VDU .Now the SM will give the command to lock the gate by clicking 'Lock' in LX menu and when the gate is closed and locked for road traffic LX gate will appear steady white in color on VDU and "LX LOCK' text will disappear. For opening the gate the SM on duty will click the 'Open' option from VDU under advise to the gateman on phone. This will be indicated as "Gate to Open" indication on Gateman control panel. On the appearance of gate open indication on the Gateman control panel, the gate man on duty will operate the button to open the level crossing gate.

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4.1.19 SETTING OF POINTS BY USING THE CRANK HANDLE

When it is not possible to set the points from VDU/Operating panel by operating individual concerned point operation command/Buttons or during route setting, the Station Master on duty shall have to set the points through traffic staff on duty by releasing the crank handle which otherwise cannot be extracted from the corresponding electric lock unless it is released from the VDU/Operating panel. Detail working of use of crank handle is given in App'B' to these rules. There are different crank handle groups for points viz:

Crank handle No.	Points/Cross Over operated by Crank Handle
CH-1	201a/b.203a/b.207a/b
CH-2	202.
CH-3	206a/b.208.209.210a/b
CH-4	212a/b.213a/b.214.215
CH-5	217.218.219.220.221
CH-6	224a/b.226a/b.227a/b
CH-7	225a/b
CH-8	230a/b.231a/b.233
CH-9	232a/b.236a/b.237
CH-10	235a/b.240a/b.241a/b
CH-11	243a/b
CH-12	228a/b.246a/b
CH-13	244.245a/b.247a/b
CH-14	262.263.264.265
CH-15	SPARE
CH-16	SPARE
CH-17	SPARE
CH-18	267.271.272.273
CH 19	268a/b.270
CH-20	269a/b
CH-21	275a/b.277.280a/b
CH-22	274.279a/b
CH-23	283.284a/b.285a/b.286
CH 24	287.288.290a/b
CH 25	289a/b.292a/b.294a/b.295a/b
CH-26	259a/b.260a/b
CH-27	298a/b
CH-28	296a/b.297.299a/b.300
CH-29	255a/b.293a/b
CH-30	256a/b.257.258a/b
CH-31	252.253a/b.254a/b

4.1.20 EMERGENCY OPERATION OF POINTS

In the event of failure of the track circuit controlling the points, if the points have to be operated, the SM on duty will first has to get physically verified that the concerned track circuit is not occupied by any train or vehicle and then press the concerned point button (WN) simultaneously with the emergency point button (EWN) and release on the operating panel OR In case emergency operation of point through

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VDU, first SM has to send "Emergency Point Normal/Reverse Request". After receiving indications, the SM will send Emergency Point Normal/Reverse Command to the field.

Each time a point is thus operated, it will be recorded on the (EWN) counter. A register is maintained for EWN counter and each operation is recorded in it. The register has the same columns as mentioned for EUUYN and EUYN counter. ASM on duty will immediately inform ESM/JE/SE to reseal the EWN button and make necessary entries in the register.

4.1.21 Automatic Replacement of signals

All stop signals are automatically replaced to 'ON' by the passage of train past the signals.

4.1.22 SIGNAL INDICATORS

The aspects of all the running signals are indicated by similar colored light indications on the signal symbols in VDU screen/Indication panel layout. 'OFF' aspect of shunt and calling-on-signals are indicated by white colour on VDU/ yellow colour on Indication panel. The details of signal symbols are given in Appendix 'B' to these rules

4.1.3 TRACK INDICATORS

The track circuited yard is divided into suitable number of small track circuits as shown on working rule diagram as well as demarcated on VDU screen/Indication panel layout for all these track circuits

4.1.24 MICROLOCK SYSTEM INDICATOR

On the VDU screen layout, the following texts in different colours are displayed:

1.	STATION NAME	AGRA CANTT.
1.1	Agra Cantt.	in Green colour Station active control
1.2	Agra Cantt	in Grey colour Station communication fault
2.	Standby active	
	Standby ACTIVE	in Green Colour Standby LCP is active
	Standby ACTIVE	in Grey Colour Standby LCP is in-active

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

The Relay Room shall normally be kept closed with Double lock viz. one Traffic and One S&T lock. Whenever, it is required to be opened for maintenance, inspection or any other work, the S&T official not below the rank of Signal Maintainer shall approach the ASM on duty and will make an entry to the effect in the register maintained for this purpose further is responsibility of S&T official when key is in his possession as per SR1403/3(6) of G&SR. The ASM on duty/after ensuring that proper entry has been made in the register with the signature will also make his initial in the register and shall then handover the traffic key to the S&T staff.

After completion of the work, the S&T official shall lock the Relay Room with Double lock and shall handover the traffic key to the ASM on duty and complete the entries in

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the register with his signature regarding handing over the key. After taking over the key, ASM on duty shall make his initial in the register and preserve the key in his personal custody. Thereafter, SS/ASM shall ensure that Relay Room has been properly locked and shall make his initial in column no. 11 in this regard.

The Proforma of the Relay Room key Register shall be as under:-

Date	Time key handed over to SI/Signal Maintainer	Reason	SI/Signal Maintainer sign.	On duty SS/ASMs sign.
1	2	3	4	5

Time of key returned to SS/ASM	Total duration	Affected train & detention	SI/Signal Maintainer sign.	On duty SS/ASMs sign.	SS/ASM sign to ensure double locks provided
6	7	8	9	10	11

4.3 **POWER SUPPLY**:

Power supply for signalling gears is obtained from three sources i.e. Up and Down catenary's & Local supply through Automatic cum Manual changeover Power panel are provided in SM office to connect supply. The primary source is Local Power from UPPCL and a secondary source is UP and DN AT .All these supplies have been made available in the Automatic Changeover Panel (MACLS Panel) provided in the SM's room having an Auto/Manual Changeover Switch. Pilot lamps have been provided in the MACLS Panel to indicate the availability of supplies in the MACLS Panel.

In case DN.AT supply fails, change over switch will work automatically and connect to Up AT supply and Vice-versa when both AT fails change over switch will work automatically and connect to Local supply . In case changeover switch does not work automatically ,the station master on duty shall operate the change-over switch with hand suitably and ensure that the colour light signals are connected to UP/DN AT /Local supply. To indicate the availability of Supply pilot lamps are provided on the switch Board in SM Office. In case Power Supply fails, the related pilot lamps got extinguished. As soon as the change over switch is operated by S.M on duty from one supply to another supply, It shall be ensured by him that related pilot lamp lit up. In case of failure of pilot lamp or changeover switches, the station Master on duty will inform the matter to Electric staff concerned responsible for maintenance of Electric gears at the station to rectify the fault.

4.3.1 **I.P.S. HEALTHY INDICATION**:

This indication is provided on Local control panel /VDU for indicating the status of chargers of 110V of IPS. This indication is provided in ASM's Office on a board with audio visual indication whenever voltage below from 110V, red indication will up and buzzer rings. SM on duty will press the push button to stop the ringing and inform S&T staff. Integrated Power Supply System will provide a battery back up of 4 hours in case of Power Supply failure.

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4.3.2 **IPS PROVIDED AT STATION** :

All signals in the station are fed by an IPS provided in Battery Equipment room. Audio visual alarms are provided in SM room for non availability of feeder AT /Local supply, IPS Module failure or Battery low indications. The S&T staff as well as electrical staff will be informed immediately on receiving an alarm of non availability of AT/Local supply to IPS.

4.3.3 **IPS PROVIDED IN LSC/RH**:

The automatic signals are also fed through IPS provided in LSC (Line Side Cabinet)/RH(relay hut). The indication of availability of Power Supply to this IPS is given on VDU screen/Indication panel provided with SM. The failure of Power Supply will be indicated by audio visual alarm. SM will call concerned S&T and Electrical staff on getting such alarm.

4.3.4 **FAILURE OF ALARMS & ACTION TO BE TAKEN BY STATION MASTER**:

IPS Indications and Failures:

Integrated Power Supply System is provided at station as well as at each of LSC/RH connected with station. The health of IPS at station is shown in a blue box provided in SM's office. The meaning of indications and action to be taken by SM is as indicated below:

LED	Instruction	LED Condition	Information To	Remarks
A	AT Failure	Red	S&T & Electrical Staff	Audio Visual Alarm. Alarm can be acknowledged
B	AT Failure Emergency Situation	Red	S&T & Electrical Staff	Audio Visual Alarm. Alarm can be acknowledged
C	System Shut down	Red	S&T & Electrical Staff	Signal feed cut off and all DC-DC Converter will continue till AT Supply restores
D	IPS Shut down	Red	S&T & Electrical Staff	All supplies will be disconnected till AT Supply restores
E	AT Supply Restore	Green		Audio Visual Alarm

The health of AT supply and IPS of LSC/RH connected with stations is indicated on VDU provided in SM's office. Indications and Action to be taken for various indications is given below.

1. UP AT, 2. DN AT,
3. IPS 4. Battery low

An audio buzzer is also provided to indicate the failure which needs to be acknowledged by SM. After acknowledgement SM on duty will advised in case of failure of above:

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S.N	Failure of	Department to be advised
(i)	UP AT	S&T and TRD Officials
(ii)	Down AT	-do-
(iii)	IPS	S&T Officials
(iv)	Battery	-do-

5. TELECOMMUNICATION:-

a. Available telecommunications facilities at Central Cabin are:-

i) Telephone connection between Central Cabin and Dy SS/CYM AGC.

ii) Telephonic communication is provided between the SM office and Level Crossing Gate No. 493 & 494.

iii) Telephones are provided at each Crank handle location box in all the Crank zones with VDU/ panel SM.

iv) Between Agra Central cabin & SM/RKM.

v) Between Agra Central cabin & SM/IDH.

vi) Between Agra Central cabin & SM/NJPC.

vii) Between Agra Central cabin & SM/BHA.

viii) Signal Post Telephone is provided, to enable loco pilot to communicate with SM/AGC on signal post A506 in DN direction on BHA-AGC section up line

b. VHF Sets with Dy. SM and SM Central Cabin.

c. MTRC Phone.

5.1 Control Phones are provided as under:-

a. AGC-PWL, AGC- TDL control telephone is provided in M/ASM Panel Cabin Dy. SM office CYM office, YM office,(AGC Loco, A.C. Loco) and SM Office.

b. Separate telephone of AGC-PWL - DY. Control circuits provided in M/ASM Dy. SM office CYM office AGC.

c. Separate telephone of AGC-PWL -TLC circuit is provided in M/ASM, Dy. SM and YM office.

d. Separate telephones of AGC-NDLS-TPC-Dy TC circuits are provided in UP Yard, Loco shed, YM Office, Dy. SM and M/ASM Panel Cabin.

Whenever any of the above communication except BSNL telephone failed, it should immediately be informed to concerned S&T staff by any means and in case of failure of BSNL phone inform complaint branch of BSNL.

NOTE : 25W VHF Set is provided to be used to advise Loco Pilot & Guard of a train for abnormal condition and also to stop the train if the situation warrants so. SM should attend immediately any call made on VHF set by Guard/Loco Pilot of a train or by adjoining station. It should not be switched 'Off' in any circumstances.

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6.0 SYSTEM OF TRAIN WORKING :

6.1 DUTIES OF TRAINS WORKING STAFF

The train working staff will work in accordance and in conformity with the duty list and duty roster supplied by the DRM's office. An operational duty list of the train working staff is appended as APP 'D' to these rules.

6.1.1 TRAIN WORKING STAFF IN EACH SHIFT

1.	Station Manager	1	Supervisory
2.	Chief Yard Master	1	Supervisory
The following train working and operational staff is deployed in each shift.			
1.	Dy. SM out door	1	As per roster
2.	Dy. SM in door	1	As per roster
3.	Central Cabin – Main ASM	1	As per roster
4.	Panel/VDU Operator	2	As per roster
5.	Shunting Master (Passenger & Goods Yard)	2	As per roster
6.	Yard Master	1	As per roster
7.	AYM	1	As per roster
8.	Points men Yard	04	As per roster
9.	Points men Station	06	As per roster
10	Points men Central cabin(EI)	01	As per roster

6.1.2 **Responsibility for ascertaining clearance of the lines and zones of responsibility**: -

During the course of normal working, the clearance of all the lines and the path to be used by running train prior to its reception/dispatch shall be ascertained by the Station Master on duty through the track circuit indicators provided on the panel from respective Home signal to relevant Advance starter signal in either direction.

In the event of failure of any track circuit or due to any abnormality the SM/ASM on duty shall be responsible for ascertaining the clearance of lines through physical verification from respective Home signal to relevant Advance starter signal.

6.1.3 **Assurance of staff in the assurance registers:**

Every train passing staff posted newly at the station or leave reserve staff at the station or regular staffs who have resumed his duties after more than 15 days absence must go through Station Working Rules in force and give assurance in the assurance register. Station Master on duty must obtain assurance from all the train working staff.

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6.2 CONDITIONS FOR GRANTING LINE CLEAR

6.2.1 CONDITIONS FOR GRANTING LINE CLEAR OR ALLOWING TRAINS IN AUTOMATIC SECTION:-

(A) **MOVEMENT OF TRAINS IN AUTOMATIC SECTION BETWEEN AGC-BHA**

The movement of trains between AGC and BHA is controlled by Signals which are automatically operated by the passage of the train passed the Signals. When the track circuits governing UP Semi Automatic Advanced Starter Signal are showing clear, the SM on duty shall clear UP Semi Automatic Advanced Starter Signal. When the train has actually been dispatched and passed the Up Semi Automatic Advanced Starter Signal, SM / BHA shall be informed of number, description and time of passage of the train under exchange of private number.

(B) **MOVEMENT OF TRAINS IN AUTOMATIC SECTION BETWEEN AGC-RKM:** –

The movement of trains between AGC and RKM is controlled by Signals which are automatically operated by the passage of the train passed the Signals. When the track circuits governing Down Semi Automatic Advanced Starter Signal are showing clear, the SM on duty shall clear Down Semi Automatic Advanced Starter Signal. When the train has actually been dispatched and passed, the Down Semi Automatic Advanced Starter Signal, SM / RKM shall be informed of number, description and time of passage of the train under exchange of private number.

(C) **MOVEMENT OF TRAINS BETWEEN AGC-IDH:**

Absolute Block system is in use for block working between AGC-IDH single line section. The section between AGC and IDH is fully track circuited with DC track circuit & Axle counter in dual detection and provided with inter cabin slotting. Before giving a slot (line clear) for an UP train the Central Cabin SM would ensure the last proceeding train is completely arrived, the section between advance starter S6 of Idgah and UP home signal S 97 of AGC is clear of trains and concerned home signal is assumed 'ON' aspect and no shunting movements are taking place towards DN. Advance starter No.96 of Idgah end.

(D) **MOVEMENT OF TRAINS BETWEEN AGC-NJPC:**

Absolute Block system is in use for block working between AGC-NJPC single line section. The section between AGC and NJPC is fully track circuited with DC track circuit & Axle counter in dual detection and provided with inter cabin slotting. Before giving a slot (line clear) for an UP train the Central SM would ensure the last proceeding train is completely arrived, the section between advance starter S1/3 of New Jn. Panel(as the case may be) and UP home signal S 95 of AGC is clear of trains and concerned home signal is assumed 'ON' aspect and no shunting movements are taking place towards Dn. advance starter No.94 of New Jn. Panel.

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6.2.2 ANY SPECIAL CONDITION TO BE OBSERVED WHILE RECEIVING A TRAIN :-

Train shall be received in accordance with GR. 3.36, 3.38, 8.05(ii) (iii) SR. 8.05/1 and GR. 14.01 to 14.03.

(i) The Main SM in the central cabin shall be responsible to ensure safe and planned regulation of reception and dispatch of trains along with other yard movements.

(ii) Clearance of the reception line before taking `OFF' of the reception signals shall be ensured jointly by SM Log in central cabin through the entries in his train register and VDU/Panel operation through the track circuit indicators on the operation VDU/Panel.

(iii) (a) All shunting on lines connected with and likely to foul the reception line to be used, by the approaching train must be stopped by the VDU/Panel operator.

(b) Crank handles of the respective point zone is locked in the locations box and its locked indication is displayed on the operation VDU/Panel i.e. showing of a miniature light. Thereafter he will take off the reception signal.

(iv) Clearance of the approach dispatch Route shall be ensured by the VDU/Panel operator through the track circuit indicator on the operation VDU/Panel.

(v) Passenger and mixed trains shall be received, as far as possible on the Scheduled platform line. In case of non-availability of schedule platform the train can be received on other platform line, which shall be arranged by SM (Main). Indoor under the instructions of SM Main, who shall be responsible to see that no undue change of platform is made. Such change of platform will be advised by SM (Main) Indoor, under exchange of private number to SM Log Central cabin. SM (Main) Indoor will also advise the other branch Heads in writing about the change of platform.

6.2.1.1SETTING OF POINTS AGAINST BLOCKED LINE :

When a running line is blocked by a stabled load, wagon, vehicle or by a train which is to cross or give precedence to another train or immediately after the arrival of a train at the station, the points in rear on double line section and at either end of single line section should be immediately set against the blocked line except when shunting or any other movement is required to be done immediately in that direction on that line.

6.2.1.2 RECEPTION OF TRAIN ON BLOCKED LINE: GR 5.09

(1) In case of reception of a train on an obstructed/blocked line, the Station Master shall -

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(a) whenever possible, intimate the Loco Pilot through the Station Master of the station in rear that the train is to be received on an obstructed line;

(b) ensure that the signal or signals controlling the reception of the train are not taken 'Off'; and

(c) Ensure that all the points over which the train has to pass are correctly set and the facing points locked.

(2) After the train has been brought to a stand at the relevant Stop signal, it may be received on the obstructed line by -

(a) Authorizing the Loco Pilot to pass the Stop signal at 'on' by taking 'off' the Calling-on signal, where provided; or

(b) Authorising the Loco Pilot to pass the relevant signal or signals at 'on' through T/509 to be delivered by competent railway servant who shall pilot the train pass such signal or signals.

(3) The train shall be brought to a stand at the facing points leading to the reception line until hand-signalled forward by a competent railway servant.

(4) Stop hand signal shall be exhibited at a distance of not less than 45 metres from the point of obstruction to indicate to the Loco Pilot as to where the train shall be brought to a stand.

(5) The Loco Pilot shall keep his train well under his control and be prepared to stop short of any obstruction.

(6) If the block is cleared after a Loco Pilot has been advised that his train will be received on a blocked line the Station Master may receive the train on signals, in such case he shall issue a written Memo instead of issuing Form T/ 509 to the Loco Pilot informing the Loco Pilot that the train is being received on signals as the block has been cleared(SR5.09/1)

6.2. RECEPTION OF TRAIN ON NON-SIGNALLED LINE(GR 5.10):

(1) Should it be necessary, in an emergency, to receive a train on a line which is not signalled for reception, the Station Master shall ensure that:

(a) the train is brought to a stand at the first Stop signal;

(b) the line on which it is intended to receive the train is clear upto the trailing points or upto the place at which the train is required to come to a stand;

(c) all the points over which the train has to pass are correctly set and facing points locked; and

(d) the Loco Pilot is authorised to pass the approach Stop signal at 'on' through T/510 to be delivered by a competent railway servant who shall pilot the train on to the non-signalled line.

(2) The Loco Pilot, while entering a non-signalled line, shall proceed cautiously and be prepared to stop short of any obstruction

6.2.1. DESPATCH OF TRAIN FROM NON-SIGNALLED LINE:

(1) In case of a train having to be started from a line not provided with a Starter signal, an authority on the prescribed form T/511 shall be given (S.R.5.11/1)

(2) The written permission shall not be given unless all the points for the departure of the train have been set and the facing points locked.

6.2.2 DESPATCH OF TRAIN FROM LINE PROVIDED WITH COMMON STARTER SIGNAL: Not applicable.

6.3 CONDITIONS FOR TAKING OFF APPROACH SIGNALS :-

When a train is to be received the SM Log and SM VDU Panel operator shall satisfy themselves, that the conditions laid down in GR. 3.36(3), SR. 3.36/1,GR . 3.38 and 3.40 have been complied with. The details of operation of various command for the reception of the train are given in Appendix `B' to these SWRs.

6.4 SIMULTANEOUS MOVEMENT OF TRAINS:

6.4.1 Simultaneous Reception of two trains:

i) While receiving up trains from IDH or RKM side on Up Main line or Up Loop Line or common platform No. 2, 3 & 4 or Bay Platform line or Up Goods Loop Line, simultaneously Down Goods trains from Bhandai on Goods receiving cum departure lines can be received.

ii) While receiving up trains from IDH sides on Up Main line or Up Loop line or common platform No. 2, 3 & 4 lines or Bay Platform line or Up Goods Loop Line, simultaneously Up Goods trains either from Raja-Ki-Mandi or from New Jn. Panel can be received on UP/Dn R & D goods lines.

iii) While receiving up trains from IDH or Raja-Ki-Mandi on Bay platform line or Up Main or Up Loop Line or Up Goods Loop Line, simultaneously Down trains from Bhandai side can be received on Down Main Line or Common Platform No.2 or common platform No. 3, 4 & 5 or R & D goods lines.

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iv) While receiving Up trains from IDH side on Bay platform line, simultaneously Up trains from Raja-Ki-Mandi or from New Jn panel side on Up main line or Up loop Line or Common Platform No.2 or common Platform No.3,4 & 5 or Up Goods loop line or on R&D goods lines.

6.4.2 **Simultaneous Reception of Three Trains at a Time:**

i) When an up train from IDH side received on Bay platform line, simultaneously an up train can be received from Raja-Ki-Mandi on Up Main line or Up loop line or Up Goods loop line and also simultaneously Down trains from Bhandai side can be received on down main line or common platform lines No. 2, 3, 4 & 5 or R&D goods lines.

ii) When an up train from IDH side received on Bay platform line, simultaneously an up train can be received from Raja-Ki-Mnadi on Up Main line or Up loop line or Up Goods line and also simultaneously Up trains from Bayana/Bandikui (New Jn. Panel) side can be received on common platform lines No. 2, 3, 4 & 5 or R&D goods lines.

iii) When an up train from IDH received on Bay platform line or Up main line or Up loop line or Up Goods line, simultaneously up goods trains from Raja-Ki-Mandi can be received on R & D lines and also simultaneously down trains can be received on down main line or common loop line No.2 or common platform line No.5.

6.5 **COMPLETE ARRIVAL OF THE TRAINS:**

Since the tracks leading to and from the adjoining stations are track circuited with Axle counter/AFTC/DC Track circuit and visual indications regarding the clearance of respective signaling section are obtained electrically on the illuminated diagram, hence, the arrival of a train is checked automatically. However, the SM on duty will watch the safe passage of run through train from his station and observe the provision of Tail Board/Tail Lamp or its other approved substitute.

In case any train/vehicle is left, fouling the track circuited portion, the signal protecting the track will not clear. When the track circuit/circuits fail/fails complete arrival of train shall be obtained in accordance with the procedure outlined in GR 4.17 and S.R's thereto of G&SR Book and further movements on that section shall only be permitted on assurance of Complete Arrival is given by the SM of the train receiving station supported by a private number.

NOTE:- Immediately after arrival of a train at the station, the points should be immediately set against the blocked line except when shunting or any other movement is required to be done immediately in that direction on that line as per GR 3.38(2) before giving 'Train out of section' Signal to the station in rear.

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6.6 DESPATCH OF TRAIN:

(i) Trains shall be dispatched in accordance with GR. 3.38, 3.42, 4.35(1) (2) (4) SR. 4.35/1, 4.35/2, GR. 5.18, 8.01(a), 9.01, 9.02, 9.09 to 9.15 and 14.08(B) (IV). The details of operation chart are given in Appendix `B'.

(ii) When a train is ready the SM (M) outdoor shall advise the SM Log central cabin to arrange its dispatch giving its number, description, direction and number of line from which the train is intended to be dispatched in case of goods train such advice shall be given by MAIN SM/YM. The SM Log central cabin will consult the Main SM Central cabin before getting the departure signals being taken `off'. On receipt of the consent of S.M. Central cabin, the SM Log will ask the SM VDU/ panel operator to take off the departure signals. The SM VDU/ panel operator will ensure that:-

(a) All shunting movement on the adjoining lines connected with and likely to foul the departure route has been stopped and controlled and

(b) Crank handle of the respective point zone is locked in the location box and its locked indication is displayed on the operation VDU/ panel i.e. showing of a miniature light. Thereafter he will take off the departure signals.

(iii) After the signals for dispatch of the passenger train have been taken `OFF' the permission to start will be given to the guard of the train by the SM outdoor either personally or by sounding the whistle in addition to announcement on public address system.

A) Down trains from passenger yard to Idgah:

(i) Main SM Central Cabin will obtain line clear and slot control from SM/Idgah supported by a private number for taking off the advance starter signal No.96 for dispatch of trains.

(ii) The Main SM Central Cabin after obtaining slot control as indicated above will advise the Gateman of Gate No. 496 to close the gate and release his electric control on DN advance starter signal No.96. On seeing the slot indication and getting private number from on duty SM/IDH. He shall stop all shunting movements fouling the path of the train and ensure that the line is clear and will take 'Off' the relevant Starter, Intermediate starter and advance starting signals.

(iii) The Main SM Central Cabin will give train entering section signal to SM/Idgah only after the train has passed signal No.96 and not before.

(B) **Down trains from passenger yard to New Jn. Panel:**

i) Main SM Central Cabin will obtain slot control from SM/New Jn. Panel supported by a private number for taking off the advance starter signal No.94 for dispatch of trains.

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ii) The Main SM Central Cabin on seeing the slot indication he shall stop all shunting movements fouling the path of the train and ensure that the line is clear and will take 'Off' the relevant Starter, Intermediate starter and advance starting signals.

iii) The Main ASM Central Cabin will give train entering section signal to SM/New Jn. Panel only after the train has passed signal No.94 and not before.

C) DESPATCH OF TRAINS TO RKM/BHA IN AUTOMATIC SIGNALLING TERRITORY:

The dispatch of trains towards RKM/BHA is controlled by relevant semi-automatic last stop signals, which can be taken to 'off' position when the line ahead of these signals is clear for 120 meters in advance of next signal. These semi-automatic last stop signals are made to work as automatic signals . After the train has passed the semi-automatic last stop signal and entered into automatic signalling territory, the SM Panel/VDU operator will inform SM Log who in turn will advise station master on duty at RKM/BHA (as the case may be) the Number, description and the direction of the train under exchange of private number, which shall be recorded at both the ends.

Note: The trains will be dispatched as per the instructions contained in Appendix H-1 and H-2 under visibility impaired conditions.

(D) Dispatch of trains from R & D lines:

i) When a train in R& D Lines is ready for dispatch the yard master will advise the actual position and the direction in which the train intended to be dispatched to the SM Central Cabin.

ii) After obtaining Line Clear/Slot control from concerned adjoining stations supported by private number for dispatch of a train, the SM Central Cabin will take 'OFF' concerned signals.

6.6.1 **ISSUE OF CAUTION ORDER :-**

i) Dy.SM indoor will issue caution order to Guard and Driver of all UP & DN trains starting from passenger Yard. He will also send Caution orders to Jhansi and New Delhi through Guard of nominated trains for certain high speed trains not stopping at Agra Cantt.

ii) YM/AGC will issue Caution order to all UP/DN trains starting from R&D lines.

6.6.2 **EXCHANGE OF SIGNALS BETWEEN TRAIN STAFF AND STATION STAFF:**

(a) All right signals shall be exchanged between the train staff and responsible station staff in the manner as prescribed under GR. 4.42(2) & SR 4.42/2. In case of trains running through, the responsible station master on duty / Off Side Porter shall show all right signal to the train if all is right for the train to continue its journey. The Station Master and off side porter shall keep a sharp

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look out on the passing train. On observation of anything abnormal, they shall show the danger signal or other prescribed indication and take action in accordance with GR. 4.29(2) and SR. 4.42/5,4.29/2 to 4.29/3.

(b) In case a train worked by Electric Engine is found passing with hot axle in dangerous condition or a box wagon with seized roller bearing, the station Master shall immediately inform the TPC/Section controller, who shall arrange to. Switch off the power supply of up and down lines of concerned section (SR 4.42/5 & SR 4.29/3).

(c) TPC shall also be advised through section controller to Switch off the power supply of the concerned section if the Loco Pilot of an electric train fails to exchange all right signals with station staff and does not stop even after raising of the signals and exploding detonators (SR. 4.29/3 and 4.42/5).

6.5 Trains running through:

1. Train will normally run through vai main line GR. 4.11 must be followed.
2. In the event of Main Line being blocked, the Up trains may pass via Up Passenger loop line and down trains via down loop lines at a restricted speed not exceeding 15 KMPH or such a speed as prescribed by approved special instructions.
3. Normally no run through Train is permitted through other passenger lines unless otherwise specified.
4. All Concernning Gates must be closed for all UP & DN through train.
5. No run throughTrain is permitted via R&D Lines.

6.7 **TRAINS RUNNING THROUGH:**

The procedure as given for `Receiving' and `Dispatching' of trains will be followed together and all concerned staff must rigidly observe GR 4.11 & SR. 4.11/1 while trains run through.

(a) Trains will normally run through via Main Line. In the event of Main Line being blocked, trains may be passed through by common Loop lines at prescribed speed.

b) Normally no run through Train is permitted through other passenger lines unless otherwise specified.

c) All concerning Gates must be closed for all UP & DN through train.

d) No run through Train is permitted via R&D Lines.

6.8 **WORKING IN CASE OF FAILURE:**

(Procedure to be followed for working trains during abnormal working).

6.8.1 **FAILURE OF POINTS , SIGNAL AND INTERLOCKING:** -

Whenever SM VDU/panel operator finds that normal/reverse indication of points does not appear on the operation VDU /Indication panel by normal route setting method, he will observe the following features: -

(a) The indication existing prior to the setting of points continues to remain in the same position even after setting of the route and the points indicators do not flash but the point locked indication flashes,

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(b) The flashing of points indicator continues and no steady indication appears after the usual route setting,

(c) The indication prior to route setting disappears after route setting and flashing of point indications continues,

(d) After the route is set the point indication continues to flash or

(e) The track circuit controlling the points shows as occupied or failed.

If even after individual operation of points the points failed to set in the required position and give steady indication. The panel operator will get the concerned points examined by the concerned, if there is any obstruction. The obstruction should be removed. Even if after this test the points continue to remain fail, the concerned point is to be set in the required position by means of crank handle operation.

(i) Failure of track circuit covering point results in the failure of electrical operation of the point/points falling within that track circuit. In such an event position of the point lying already set cannot be set to other position by operation of route select option and shall cause failure of the signals permitting movement on that track circuit. Hence, before initiation of any route setting, SM on duty should check that all the track circuit indications coming en route are showing clear (i.e., showing either `no light' or `white light')

(ii) After the route for some movement has been initiated by the SM on duty and all the points have been set properly and their indication displayed on the Panel but route lights did not appear, the interlocking shall be treated as defective and hence all the points coming en route shall be treated as defective and must be switch clamped and padlocked in terms of GR. 3.68, 3.69 and 3.70 and SR. 3.68/1(a) and (b), and trains shall be passed on the authority of T/369 (3b).

(iii) If the required points have been set to the desired position and their indication displayed on the Panel by normal route setting process or after taking the signal to `off' the route lights appear properly but signal fails to come `off' the signal will be treated as defective and movement shall be made on the authority of T/369 (3b) after taking due precautions as laid down in G&SR. 3.68 to 3.70.

(iv) In case of failure of point due to failure of its track circuits or any other reason SM on duty will arrange its setting by Emergency point operation or manually by crank handle (if point fails to get operated by Emergency point operation). Emergency point operation will be done only after ascertaining physical clearance of Point Zone for any obstruction.

(v) After setting of points by crank if its proper indication is received, SM on duty will take off the signals. Signal will not `come off' in case of failure of track circuit but if the route indications of other track circuits, except one which has failed appear properly the route will be treated as set and locked. In case track circuit is working properly the trains will be worked on proper signals.

(vi) When a point is operated by SM on duty but existing indication persists as such or the point flashing starts and continues and no steady indication in other position is obtained, the point will be treated as defective. In case flashing continues the SM on duty will set the point to the `normal' position and will arrange to check the point for any obstruction or if required will get it

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operated by crank handle. If the correct indication of the point is received the routes will be set and signals taken `off'.

(vii) In case no indication of `N' or `R' is received but its correct setting at the required position has been ensured by physical observation, the SM on duty take off the signal, and if route indications appear and signal `comes off' train can be passed on proper signals in terms of SR. 3.68/1(b) as all the signals at this station are equipped with colour light signal units (and not fitted with reversers or signal motors) and all the facing points are electrically detected. ESM /JE/SSE shall be advised to rectify the defective point immediately.

(viii) **FAILURE OF ROUTE LIGHT:**
When a route is set and route indications appear it ensures that the complete route is correctly set and locked. In case route lights do not appear due to any defect the interlocking will be treated as defective and the train will be passed only after all the* points have been switch clamped and padlocked and train shall be passed on the authority of T/369 (3b).

(ix) When the point is not properly set in `N' or `R' position the indicator in `N' position will give flashing indication.

6.8.2 **FAILURE OF TRACK CIRCUITS: -**

In the event of failure of track circuits provided on the berthing portion of the running lines, the SM VDU/Panel operator will advise SM log who in turn will advise SM (M) indoor under exchange of private number. The SM (M) indoor will get the clearance of the said line ensured by the SM/Main . Thereafter he will advise accordingly to SM log under exchange of private number. SM log will then advise SM VDU/Panel operator to set and lock the points by individual operation and/or crank handling of points, After complying with the above the train may be received on calling on signal.

In case of failure of any of the track circuits in the approach/departure route, the clearance of the affected portion of the track shall be verified in the same manner as described in the para 6.8.1(a) and similar action shall be taken in case of reception of a train. However, in case of dispatch of a train, the SM log after ensuring correct setting and locking of the route, will advise SM (M) indoor under exchange of private number to issue T/369(3b) to the relevant departure signals.

NOTE: Complete yard is Track circuited in redundancy through DC track circuit /MSDAC OR dual MSDAC (except R&D 1 to R&D 9 lines which having dual MSDAC) at this station as per diagram attached.
In case of failure of Track circuit (AFTC/DCTC) and Axle Counter provided in parallel to that AFTC/DCTC track circuit is functional SM shall work according to JPO No.1 of NCR/HQ, No.-T/Gen. /JPO Record/ 54/19 Dated-09.10.2020. Detail working is given **as following**.

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(i) In case failure of DC Track Circuit and MSDAC provided in parallel to that DC track circuit is functional, in this case the aspect of concern signal must be restricted to "SINGLE YELLOW". The SM will advise section controller and concern P.Way and S&T staff of the station on the MTRC/CUG/written memo giving details of DC track circuit failure based on DC track circuit failure indication on OPC/VDU provided in SM's room. System will normalize the concerned signal/signals either after track circuit(AFTC/DCTC) picks up & failure indication vanishes or after the same is rectified by S&T staff.

ii) In case MSDAC provided in parallel of any DC track circuit fails and concern DC track circuit is functional, the on duty SM shall advise Section Controller as well as concerned maintenance staff of S&T. In such cases, the trains shall be dealt on proper signal. These failures should also be recorded in the signal failure register of the station

iii) In case of failure of both redundancy track circuit ie .MSDAC or track circuit (AFTC/DCTC) of concern track portion and whereas MSDAC is not provided in parallel the track circuit (AFTC/DCTC) , the trains shall be received by taking 'Off' calling on signals/ "A" Marker and when calling on signal /"A" Marker cannot be taken off, the procedure as laid down in G&SR No.3.68, 3.69, 3.70 and 3.71 must be followed. Failure memo to be issued.

For detail working of MSDAC see Appendix-B of this SWR.

6.8.3 ***FAILURE OF POINTS*:-**

When any point is defective and indication is not available on the VDU/Indication Panel, action as per SR 3.77/1 must be complied with i.e. points should be reported and inspected for any obstruction etc. and S&T staff should be advised. No movements should be permitted over the point unless it is correctly set, clamped & padlocked under personal supervision of the SM on duty as per SR 3.68-1(d) of G&SR (SR 3.51-4 should also be followed).

6.8.4 **FAILURE OF SIGNALS:-**

The signals can fail due to any one of the following reasons:

i) Failure of the controlling track circuits.
ii) Failure of Point/Points to get set and locked in the required position.
iii) Failure of route locked indication lights.
iv) Failure of signal lamps.
v) When there is conflicting indication of the track circuits.
vi) When the Signal repeating indication in the VDU/Indication Panel does not confirm with the aspect of the signal at site.

a) **PROCEDURE TO BE ADOPTED WHEN MAIN SIGNALS HAVE FAILED:**

In case of failure of Home and Starter signals, the Driver of the concerned train shall be authorized by the SM on duty to pass the defective Home signal by taking 'Off' the Calling-On signal, 'A' Marker or by issuing the authority to pass the Home /Starter signal at danger T/369(3b), as the case may be. Attention is drawn to GR 3.68 to 3.74 & 3.77 of G&SR Book.

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6.8.5 WORKING OVER THE DAMAGED POINTS

Attention is drawn to G.R. 3.77 of G&SR Book.

6.8.6 RECEPTION OF TRAINS ON OBSTRUCTED LINES

Attention is drawn to G.R. 5.09 of G&SR Book.

6.8.7 RECEPTION OF TRAINS ON NON-SIGNALED LINES

Attention is drawn to G.R. 5.10 of G&SR Book.

6.8.8 FAILURE TO READ THE OCCUPATION OF LINE BY TROLLEY OR LIGHT ENGINE

In case of such failures, if the controlling track circuit fails to show the occupation of Trolley or Light Engine due to any reason, the SM on duty shall set the point to other line and take a special attention of occupied line by endorsing remarks on TSR with red ink and shall inform the Signal Maintainer in this regard. Necessary remarks shall be made in the Signal Failure Register.

6.9 PROVISION FOR WORKING OF TROLLEYS/ MOTOR TROLLEY/ MATERIAL LORRIES:

Some of the precautions such as given below should be mentioned:-

(i) When a Motor Trolley is permitted to proceed in the section, the station master concerned will exchange private numbers, with the station master in advance. No train shall be allowed to follow the motor trolley unless the trolley clears the section and the station in advance exchanges private numbers with the station in rear in token of the arrival of motor trolley.

(ii) Motor Trolleys/Tower Wagon/Material Lorries are not likely to actuate the Axle Counter correctly. When they are to run over the section split by the Axle Counters, the whole section to be treated as one and next train to be started after the last train has arrived completely.

(iii) In all other respects the working of a light Motor Trolley shall conform to the rules laid down for ordinary trolley 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.

(iv) Non-insulated trollies/lorries are strictly prohibited on the track circuited portion of the yard.

Attention is drawn to G.R. 15.25, 15.26 & 15.27 and S.R. thereof to the G&SR book.

6.9.1 PROVISION FOR WORKING OF TRACK MAINTENANCE MACHINES:

Track laying or on track tamping or maintenance machines shall be worked only the permission of SM and in accordance with special instructions.

Attention is drawn to G.R. 4.65 and S.R. thereof to the G&SR book.

7.0 BLOCKING OF LINES :-

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(a) In ordinary course of working Vehicles or engines shall not be detached or placed on running lines. If however in an emergency it becomes necessary to detach or place an engine with vehicles or vehicles alone on running lines, the SM (M) Indoor shall advise the SM log under exchange of private number to this effect. Who in turn will advise the SM VDU/Panel operator to this effect and the SM VDU/Panel operator shall block the concern line.

(b) The SM (M) outdoor and the will see that there is no undue delay in clearing the block running line. As soon as the position permits SM (M) outdoor/Indoor will advise the SM log for its clearance under exchange of private numbers.

(c) Suitable remarks regarding blocking of the running lines shall be made in the relief diary at the time of handing over charge at both the places i.e. SM (M) Indoor and SM Log and shall be signed by both Incoming and outgoing SMs.

(d) Running line and their crossover are not allowed to be blocked by stabling the vehicles. Vehicles must be placed on the stabling lines inside the fouling marks. When in an emergency a load is stabled on a running line, it must be secured vide SR 5.19 (d). Special attention is drawn to SR 5.19/1.

(e) Placing on a running line temporarily for the purpose of attaching to or after detaching from a train is permitted under the provisions of SR 5.23/1 & 5.23/2.

7.1 <u>BLOCKING OF FUNCTIONS</u>:

The blocking of concern function may be done by the on duty SM by putting the button collar's on panel button in case working on panel or through the blocking/disable option from pop-up menu commands of the function.

7.1.1 There is a provision for blocking of following functions in the LCP [VDU]

(a) Individual signal block in signal menu/
(b) Individual point block in points menu
(c) Individual track circuit block in track menu

During course of disconnection / accident or any unusual occurrence if required to disconnect the function, SM on duty will select the above options in VDU. As soon as SM will click the function a flashing Blue indication will appear near the function and continue till the function blocked by SM.

NOTE:Blocking of function will be done in full such as a calling on below home signal or a shunt signal below starter signal can not be blocked separately.

7.1.2 USE OF BUTTON COLLERS ON OPERATING PANEL:-

The button collars must be placed by the SM on duty on the route button of a line on which a train, an engine or a vehicle is left standing or which is otherwise obstructed. The button collars must also be used whenever the line is occupied by a train whether it is stopping in the normal course or otherwise

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to give precedence to another train or for any other reason in accordance with SR 3.38/1 of G&SR. In addition when running line is blocked the points should be set for a vacant line/less important load / loop line etc. as per SR 3.38/2 of G & SR besides the points of the blocked line must be set clamped and padlocked against the line and keys kept with the SM/ASM as per SR 3.38/2 of G&SR. The button collars must be placed on the buttons on the panel when the line is blocked:

7.2 During the execution of any work within Station limits which obstructs or may obstruct any running line/lines and creates unsafe conditions dangerous to running of trains, the procedure laid down in SR. 15.09/1(c) must be rigidly observed.

7.3 SETTING OF POINTS AGAINST BLOCKED LINE:-

(A) when a running line is blocked by a stabled load wagon vehicle or by a train which is to crossed or give precedence to another train which is to cross or give precedence to another by a train which is to cross or give precedence to another train or immediately after the arrival of a train at the station , the points in rear or double line sections and at either end on single line sections should be immediately set against the blocked line except when shunting or any other movement is required to be done immediately in that direction on that line . GR 3.38(2) .

(B) if all the lines of station are occupied and line clear is granted for a train then the point should be set such a way for a occupied line by stabled load or goods train that occurrence of accident may be minimized.

(C) Blocking of line and removed of obstruction shall be entered in TSR with RED ink and controller shall be advised.

7.4 SECURING OF VEHICLES :

Vehicles standing on running lines and in sidings must be secured with safety chains as detailed in SR. 5.19/1 (d), SR 5.23/1 & SR 5.23/2.

8.0 SHUNTING: -

8.1 General precautions:-

(a) All shunting should be performed under personal supervision of Guard of the train/SM/ person in charge of shunting.

(b) T-806 must be issued to the guard and driver of the train for all shunting operations prior to commencement of shunting.

(c) Shunt signal must be taken off for shunting operation of concerned line when ever possible.

8.2 Shunting in the face of approaching train:-

a) Shunting may be performed within the station section unless prohibited by the station working rules.

a) No hand or loose shunting is permitted out side the outer most facing point in case multiple aspect signals unless the approaching train has to stop at the

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first stop signal and the station master has personally satisfied himself in this regard (see SR 5.14/3).

8.2.1 **Shunting in face of an approaching train is permitted up to Advanced Starter signal provided that;**

a. Whenever control has been given to Idgah for an Up train, no shunting shall be permitted in that direction.

b. Shunting can be performed within station Section in the face of an approaching train after granting line clear, provided the concerned reception signals are kept at 'ON' position in clear wheather.

c. On UP Road between Agra Cantt and Raja-Ki-Mandi provision of G.R 9.13 and SRs there under are to be complied with.

d. On DN Road between Agra Cantt and Bhandai provision of G.R 9.13 and SRs there under are to be complied with.

e. But when shunting on JHS end to be performed, it should be ensured that the engine is kept leading due to falling gradient towards block section at this station.

f. If it is not feasible to have the shunting engine leading towards falling gradient, shunting may be performed by keeping engine of the other end provided no line clear has been given to a train coming from opposite direction, subject to a distance limitation of 45 meters up to station building short of the point from where the falling gradient commences as per GR 5.20.

g. On UP Line between Raja-Ki-Mandi and Agra Cantt & on DN Line between Bhandai and Agra Cantt , in automatic signaling territory, the movement of trains against the established dirction of traffic is not permitted as per GR 9.13 and SRs there under is to be followed.

8.3 Prohibitation of Shunting:

1 When signal have been taken 'OFF' for an in coming train on to a line which is not isolated, no shunting movement shall be carried on towards near end and far end points over which the incoming train will pass as per GR. 8.05 & SRs is there under must be followed.

2 Hand and loose shunting for all types of vechicles is prohibited.

3 If shunting is performed from both ends in the goods yard the person in-charge of shunting at one end will advise the person in-charge at the other end through the on duty SM Central Cabins, about the shunting operations to be performed. He will also depute a Points man for pinning down the brakes in the rear of the load and to ensure that the rear points are not fouled. The Points man deputed will show danger signal when the rear of the load is approaching the fouling marks. If the line is on a curve, then the additional Points man will be posted at a suitable distances to repeat the signal to the shunting engine driver.For goods train shunting planning only on duty YM is responsible.

4 Roller bearing stock and other types of vehicles shall be secured in accordance with GR: 5.23 and SRs must be followed.

8.4 SHUNTING WITHIN STATION SECTION:

1. Shunting within the Station Section shall not be permitted if line clear has been granted in thick, foggy or tempestuous weather and impaired Visibility.

2. Shunting can be performed within station section in the face of an approaching train after granting line clear provided the concerned reception

signals are kept at 'ON'.

3. When reception signals have been taken off for an incoming train on to a line which is not isolated, no shunting movement shall be carried on towards the points over which the incoming train will pass.

8.4.1 **Precautions to be taken during shunting:**

1- On duty DY.SS out door /shunting on a station will be responsible for supervising shunting operations including attatching and detaching /programme coaches in passenger yard.

2- One movement shall normally be permitted on one line at a time. Whenever another movement has to be conducted before completion of the previous one, the person supervising the shunting shall be warned to exercise extra precaution.

3- Normally the Station master will not change or interfere with the points while the movement is taking place over them and till the movement for which these were set has been completed if necessary first he will advice to shunting supervisor.

4. The red danger signal shall always be exhibited by the person, supervising the shunting, so as not to affect running of other trains.

5. The official in charge of the shunting operation must ensure that no running line is being fouled or obstructed by a vehicle/load stabled on the adjoining line.

8.5 SHUNTING OUTSIDE STATION SECTION –

b. SHUNTING TOWARDS : IDH & JNP:

(i) Shunting/obstruction for any other purposes shall not be permitted in the block section in rear or in advance unless it is clear as per GR. 8.06 and the line has been blocked back or blocked forward as the case may be.

(ii) Whenever such shunting is permitted after blocking back or blocking forward the line, the CASM must issue an authority on form No.T/806 authorizing the driver to enter the block section for performing shunting. This authority will also be given if such shunting is performed in the Block section in advance occupied by a train traveling away from the station.

(iii) Shunting in the block Section in rear shall only be permitted when it is clear and the section has been blocked back. In case of shunting in Block Section either sides of AGC and, the concerned Level Crossing Gates shall be closed and locked against road traffic.

iv) **Shunting towards RKM & BHA**- Not permitted incase if it becomes neccessery to perform shunting towards RKM/BHA, the SM on duty central Cabin must ensure that the Line on which shunting is to be performed is clear as per SR 9.13/1 of G &SR.

a. SHUNTING IN THE COD SIDING TAKING OFF FROM STATION YARD GOODS YARD:-

i) Before dispatching a load or an engine into the COD Siding the SM on duty will set and lock the route for COD siding and take 'OFF' the shunt signal of the concerned line from which the load or engine is to be dispatched.

ii) The shunting in the siding taking off from station yard will be done under personal supervision of Guard of the train/SM/person in-charge of the shunting.

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8.6 PROHIBITION OF SHUNTING ANY SPECIAL FEATURE :

i) All Hand and Loose: shunting that will foul the main lines is strictly prohibited.

ii) Hand shunting of any vehicle fitted with roller bearings such as Box's, BRHs and BFRs etc. is strictly prohibited except in siding isolated from running lines.

iii) Loose shunting of Roller bearing stock is strictly prohibited.

iv) Roller bearing stock will be secured in accordance with SR 5.28/2 and other stock as per SR:5.23/2 of G&SR.

v) Starter signal/shunt signal/shunting permitted indicators should be taken 'off' for shunting purpose.

vi) The Dy. SS/Indoor SM/Shunting Master on duty will be responsible for supervising shunting operations on trains including attaching and detaching slip/program me coaches in passenger yard.

vii) The Pilot man /Shunting Master will be deputed to pilot the Engine/load while performing shunting in the passenger yard area, and he will ensure that the intervening Hand points, if any involved in the route are correctly set and requisite shunt signal taken 'Off'.

viii) The non interlocked points not provided with track locking/lock bar must be clamped and padlocked before performing shunting over them as per SR. 5.14-1 (e) of G&SR.

a) Hand points of washingpit and Sick lines.
b) All Hand Points leading to TW SDG, Saloon SDG, Loding/Unloading and Stabling siding,.

9.0 ABNORMAL CONDITIONS:

(a) **The Rules to be observed in the Event of abnormal Conditions.**

(The Procedure to be followed for working trains during abnormal working).

(i) During partial interruption /failure of Electrical communication instrument; SR.6.02-3 of G&SR must be followed.

(ii) The authority to proceed in the occupied Block section in case of obstruction of line or accident; GR.6.05 and SR 6.05/1 & SR 6.05/2 must be followed.

(iii) Trains delayed in Block section SR.6.04/1 must be followed.

(iv) FAILURE OF MTRC (MOBILE TRAIN RADIO COMMUNICATION) :-
On duty SM/ASM inform to section controller.

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

The detailed procedures for emergency crank handle operation of motor operated points at different lines at the station are mentioned in APP 'B' to these rules.

Procedure for Emergency operation of point with point zone track circuit failure and emergency route release are given in APP 'B' to these rules. Attention is drawn to GR 3.39 and GR 3.77 of G&SR Book.

(c) **CERTIFICATION OF CLEARANCE OF TRACK BEFORE CALLING-ON SIGNAL OPERATION IS INITIATED:-**

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Before taking 'Off' 'Calling–On' signal during failure of track circuit/axle counter, the route and the clearance of the track over which train would pass is to be verified personally by SM/SS on duty.

(d) **REPORTING FAILURE OF POINTS, TRACK CIRCUIT AND INTERLOCKING**

If any signal failure occurs due to failure of track circuit, point, block instrument etc. SM on duty must inform signal maintainer in writing and make an entry of the signal failure in signal failure register. At the station where signal maintainer is not posted the failure message should be given to Test Room through control. Attention is drawn to SR 3.68/6 (a).

On arrival, the signal maintainer shall contact the station master, inspect the defective gear, issue disconnection memo (if required) rectify the fault and certify the failure in the failure register. {SR 3.68/6(b)}.

Normal working shall resume only after jointly testing is done by SM & Signal Maintainer and also written fit is given in SI-26 {SR 3.68/6 (c)}. During this period the movements of train shall be made by Station Master as per G&SR 3.68 to 3.72 & 3.77.

The entries in failure register to be done with message to the section controller.

9.1 TOTAL FAILURE OF COMMUNICATION

A) TOTAL FAILURE OF COMMUNICTION ON DOUBLE LINE SECTION

In the event of total interruption of communication occurring between stations on Double line section i.e., when train cannot be worked by any one of the following means stated in the order of preference viz.,

i) Track Circuiting.

ii) Block Telephones.

iii) Station to station fixed telephone, where available.

iv) Fixed Telephone such as Railway Auto Telephones and BSNL Phones.

v) Control Phone.

vi) V.H.F. Sets.

The following procedure should be adopted for train passing:-
The Station Master on duty, who has a train to dispatch through affected Block Section shall stop the train and apprise the Guard and Loco pilot about the situation SR 6.02/3 of G&SR.

i) The S.M. on duty shall give T/B 912/ T/C-602 to the Loco Pilot of each train, which shall include:-
An Authority to proceed without line clear.
An Authority to pass the last stop signal, Automatic, Semi-Automatic, Manually operated and Gate signals in 'ON' position.

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A Caution Order restricting the speed to 25 KMPH over the straight and 10 KMPH where the view ahead is not clear.

ii) Trains shall be worked as per G.R 9.12 & S.R's thereof till any one means of communication is restored.

A) **TOTAL FAILURE OF COMMUNICATION ON SINGLE LINE SECTION:**

In the event of total interruption of communications occurring between block stations on single line section i.e., when 'Line Clear' cannot be obtained by any one of the following means stated in the order of preference viz., .

1. Block Instruments or Axle counters:
2. Telephone attached to the Block Instruments.
3. Fixed telephone such as Railway Auto-phones & BSNL phones
4. Control Telephone
5. V.H.F Sets.

The following procedure shall be followed by SM on duty for working of trains :-The Station Master, who has a train to dispatch through the affected block section, shall open communications by establishing contact with the Station Master of the block station at the other end of the affected block section by sending an engine or self propelled vehicle or any other prescribed vehicle.

Before the Light Engine/ Train Engine/ Motor Trolley/ Tower Wagon/ Trolley/ Cycle Trolley/ Moped Trolley/ Diesel Car/ Rail Motor Car/ EMU Rake is sent into the affected block section to open communications, the Loco pilot/ Motorman/ Guard/ Station Master being send to do so shall be advised by the Station Master on duty of the circumstances in which and the purpose for which he is being sent. The Station Master on duty shall also satisfy himself that the Loco pilot/ Motorman/ Guard/ Station Master being sent to open communications, thoroughly understand, the rules of working of trains during total failure of communications on the single line. If the Loco pilot/ Motorman/ Guard/ Station Master, who is being sent to open communications, is not conversant with the Rules for working of trains during total failure of communications on single line, the Station Master on duty shall explain these rules to such staff.

Before dispatching the Light Engine/ Train Engine/ Motor Trolley/ Tower Wagon/ Trolley/ Cycle Trolley/ Moped Trolley/ Diesel Car/ Rail Motor Car/ EMU Rake, the Station Master on duty shall hand over 'Authority for opening of communication during total interruption of communication on single line section (T/B 602) to the Loco pilot/ Motorman/ Guard/ Station Master, who is being sent to open communication, which includes: -

(a) An "Authority to proceed Without Line Clear",

(b) A Caution Order specifying the speed up-to which the engine or self-propelled vehicle or other vehicles as mentioned above may run to the affected block section,

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(c) An Authority to pass the last stop signal in the "On" position in case there is a last stop Signal at the station,

(d) A line Clear Enquiry message (T/E 602) addressed to the Station Master of the block station at the other end of the affected block section asking for Line Clear for the train waiting to be dispatched to his station and

(e) A Conditional Line Clear message (T/F 602) to the Station Master of the block station at the other end of the affected block section permitting him:

(i) To return the Light Engine/ Train Engine, either light or attached, to a train waiting to be dispatched from his station, or attached with another engine; or

(ii) To return Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake running by itself; or

(iii) To return Motor Trolley/Cycle Trolley/Moped Trolley either running by itself or loaded in a train waiting to be dispatched from his station.

Attention is drawn to 6.02/4.

NOTE:

1. Whenever train engine is detached to open up the communication, the SM on duty and the Guard in-charge of the train shall ensure that the train/vehicles are properly secured. The points at both the ends must be set against the occupied line in accordance with G.R. 3.38/2.

2. Exchange of all right signal : All right signal will be exchanged by the SM/ASM as per the provision of G.R. 4.42 & SR there under with the non-stopping train staff.

9.2 TEMPORARY SINGLE LINE WORKING ON DOUBLE LINE SECTION

Attention is drawn to S.R. 9.12/3, 6.02/1 of G&SRs book and Chapter-X of Block Working Manual.

i) Whenever an accident to a train or track or other obstruction precludes the use of one of the lines on double line section, trains, shall be worked temporarily on single line, and line clear shall be obtained by means of communications provided at the station.

a) On block telephone.

b) On Single Line block instruments to be temporarily installed in case the interruption is likely to continue for a substantial period.

ii) Before introduction of single line working, the ASM on duty shall take action as per SR 9.12/3.

iii) The loco pilot shall be given T/D 602, which shall includes :-

a) Single line 'Paper line clear ticket' as an authority to proceed or token/tablet when such instruments are installed.

b) A Caution order showing the line on which single line working is introduced, place of obstruction & speed restriction to be followed enroute.

c) An Authority for passing the Last Stop Signal in 'ON' position.

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d) Normal working shall be resumed in accordance with SR 9.12/3.

NOTE:

1. Trains shall be piloted out on T/511, in case of trains proceeding in the wrong direction.
2. The approach signals at the station in advance shall be taken 'Off' where applicable.
3. The speed of all trains running in the wrong direction in automatic territory shall not exceed 25 KMPH.

9.1 DESPATCH OF TRAIN UNDER AUTHORITY TO PROCEED WITHOUT LINE CLEAR TO ASSIST THE CRIPPLED TRAIN

Whenever a relief engine or relief train has to be dispatched to assist the disabled train or to the site of accident in the block section, the S.M. on duty after ensuring that the route for the dispatch of relief train/engine is correctly set as ensured from the panel, shall hand over T/A 602 or T/C 912 as the case may be to the loco pilot which shall include:-

i) An Authority to proceed without line clear.

ii) An Authority to pass the Advance starter signal in 'ON' position.

iii) A Caution Order on which it shall be stated:-

a) Kilo-meter of site of disabled train/accident

b) The station to which the disabled train shall be taken.

c) A warning that the train shall be brought to a stand at or opposite the first stop signal as the case maybe, of the station to which it is being taken and further be guided either by the lowering of the reception signals or by written authority issued by the Station Master as the case may be.

10.0 VISIBILITY TEST OBJECT

UP and DN Main line Starter Signal have been nominated as visibility test objects at this station.

11.0 ESSENTIAL EQUIPMENTS AT THE STATION

The essential equipments provided at this station are enumerated in App. 'E' attached to these rules.

12.0 FOG SIGNALMEN NOMINATED TO BE CALLED IN CASE OF FOG

- NOT APPLICABLE –

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LIST OF APPENDIXES

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APPENDIX 'A'
WORKING OF LEVEL CROSSING GATES(LX-494):

1. GENERAL:

1.1 DESCRIPTION OF THE LEVEL CROSSING GATES:

No.	DESCRIPTION	REMARKS
1.	Number of level crossing gate.	494, "C" Class
2.	Engineering or traffic gate.	Traffic
3.	Under control of Station Master /section Engineer (P-way)	SM / AGC
4.	Location of KM.	1341/11-13
5.	At Station.	Agra Cantt.
6.	In between station.	AGC-Yard
7.	BG/MG/NG.	BG
8.	Single/Double/Mixed line.	Double line.
9.	Normal position.	Open to road traffic
10.	Interlocked/non interlocked.	Interlocked
11.	Means interlocking.	-
12.	Provision of gate signals at KM.	-
13.	Signalling arrangement/system of signalling (i) Up line (ii)Dn line	Interlocked with stop signals of station.
14.	Means of communication-telephone/bell etc.	Telephone with SM Agra Cantt.
15.	Width of level crossing gate.	6.4 mtr.
16.	Type of Road.(NH/SH/Others).	Others.
17.	Name of Road.	Sohalla-Dhanoli
18.	Metalled/Non Metalled.	Metaled.
19.	Approach Road.	Metaled
20.	Width of Road.	6.1 meters.
21.	Angle of Road Crossing (In case of skew gate).	Nil
22.	Road gradient (If any).	
	i) Toward N/E.	1 in 20
	ii)Toward S/W	1 in 20
23.	Road Alignment (Straight/Curve).	
	i) Toward N/E.	Straight
	ii)Toward S/W	Straight
24.	Provision of Height gauges.	Yes.
25.	Type of barrier.	Power operated LB with Sliding Boom
26.	Length of check rail.	7.75 meters
27.	Road surface in between LC Gates.	Packka
28.	Length of rumble strip/speed barker.	Provided.
29.	Road Sign.	Provided.
30.	Speed braker indication board.	Provided.
31.	T.V.U.	81747, 10/2021
32.	Census next due on.	10/2024
33.	Demarcation for placement of detonators.	Provided.
34.	No. of gateman working.	03 (08 hrs shift)
35.	Nearest Railway Medical Assistance.	Railway Hospital Agra Cantt.
36.	Nearest Private Medical Assistance.	Govt.Hospital Agra Cantt
37.	List of equipment available. Yes/No	Yes.

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1.2 EQUIPMENT

S.N.	Items	Quantity/Numbers
1	Hand Signal Lamp /Tri Colour Tourch	3
2	Hand Signal Flag Green	1 Mounted on sticks.
3	Hand Signal Flag Red	3 Mounted on sticks.
4	Banner Flag Red	3
5	Posts for exhibiting red banner flag	2
6	Spare chains with padlocks	2 with stop mark.
7	Detonators	10 in plastic case.
8	Gate lamps	-
9	LED flashing lamp (with red &Green)	1
10	Tommy Bar	1
11	Mortar Pan	1
12	Spade/Fowrah	1
13	Hammer (in case of asphalted road this may not be provided)	1
14	Pick Axe(in case of asphalted road this may not be provided)	1
15	Tin case for flags	1
16	Can for oil	-
17	Water pot/Bucket	1
18	Canister for Muster Roll	-
19	Set of spare spectacles of gateman wearing glasses	1
20	Board demarcating protection of level crossing gate diagram in case of obstruction on gate.	1
21	Basket	1
22	Whistle	1(Separate for each Gateman)
23	Wall Clock	1
24	Small Chain	2

Note :

(i) Where LED based hand signal lamp provided there use of fusee may be dispensed with).

(ii) Item no. 11, 12, 13, 14, 16, 18, 20 and 21 shall be dispensed with at L-xing gates operated by cabin master, cabin man/ Lever man.

1.3 RECORDS TO BE KEPT AT GATE LODGE :

In addition to the above equipment, following records shall also be kept at the gate lodge.

1 Gate Working Instructions in Hindi/English.
2 Gateman Rule Book in Hindi / English.
3 List for tools and books.
4 Duty Roster.
5 Certificate for working as gateman.
6 Bio-data particulars of Gatemen, including date of passing vision test, initial/refresher course, safety clamp, etc.
7 Accident Register.
8 Record of last census of road traffic at level crossing gate.
9 Public Complaint Book.
10 Inspection Book.
11 S&T register in case of interlocked engineering gate.

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1.4 **MODE OF OPERATION:**

Since gate is provided with power operated lifting barrier so both booms working simultaneously.

1.5 **DUTIES OF GATEMAN:**

1 **ALERTNESS:**

The gateman shall be alert and be prepared to take immediate action, should danger be apprehended. Keys of the gate shall be in his personal custody.

2 **POSITION DURING PASSAGE OF TRAINS:**

During passage of trains, gate man will stand in the manner indicated below:

i. Gateman will stand attentively in front of the gate-lodge facing the approaching train.
ii. In day time, gateman shall hold red and green flags furled up on separate sticks in right and left hands respectively
iii. In night time, gateman shall hold lighted hand signal lamp with while 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/ red light is placed across the track whenever the gate is kept in open condition at non-interlocked level crossing and during emergencies or obstruction on track at there type of gate.
ii. Gateman shall ensure the gate lamps and lamps of all gate signals 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 reliever arrives and takes charge of it. However, if it is necessary to leave the gate in an emergency, he must closed lock the gates against rod 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 Gate man shall also be prepared to repeat any signal while guard may give to loco pilot on walkie-talkie or in any other way.
vii. If Electrical lifting barriers get damaged or becomes out of order, the gateman shall use the sliding Boom barriers. If both the Electrical Lifting Barriers & Sliding Boom 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
viii. Gateman shall report to the nearest Station Master, Gang mat or SE (P.Way) any defect in his gate or apparatus pertaining to it, as soon as possible.
ix. In the event of gate signal becoming defective the gateman shall maintain the signal in the 'ON' position even by disconnecting the signal or the wire if necessary.
x. At the gate whose signal have become defective, the gateman shall close and lock the lifting barriers on sighting a train and hand signal or pilot the train past the defective signal. In such case he should inform the loco pilot to report the defect at the next station.
xi. Gateman shall wear badge and prescribed uniform while on duty at level crossing gate.
xii. Gateman shall ensure that he is having competency certificate in his possession while on duty.
xiii. Gateman shall work the gate as per Gate Working Instructions and remain well conversant with these instructions.
xiv. Gateman shall ensure that equipment supplied at the gate is in good order and ready for immediate use.

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xv. Gateman shall see that the channel for the flange of the wheel is kept clear.
xvi. Gateman shall keep the road surface well watered ad rammed in case of un-metalled roads.
xvii. Gateman must be vigilant to see that inconvenience to road users due to closure of gates should be to the minimum possible extent.

xviii. Gate man on electrified section shall watch that road vehicle/animals passing from gate are within the height loading gauge provided on either side of the level crossing gate
xix. Gateman shall prevent tress passing by persons or cattle to the maximum extent.

4 **ACTION IN CASE OF UNUSUAL OCCURRENCE ON TRAIN:**

In case gateman observes any thing 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. But in case of train parting, gateman shall not show stop hand signal but shall show prescribed signal for train parting i.e. green hand signal during day and white light during night weaving UP & DN vertically.
iii. 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.
iv If loco pilot /Guard fail to take notice, gateman shall immediately inform the Station Master/ Cabin Master. If connected on telephone, to take appropriate action, under exchange of private number.

5 **ACTION IN AN EMERGENCY AT THE LEVEL CROSSING:**

i. In case of an obstruction at the level crossing gate, gateman shall maintain the gate signals, if any, in the 'ON' position. Gateman will press emergency button for 2 seconds to put back gate signal into danger.
ii. Thereafter, if he is unable to remove the obstruction gateman shall immediately advise the Station Master on duty, if connected by telephone, regarding the defects/obstructions at the gate, under exchange of private number.
iii. If there is no response from the Station Master after two or three attempts, he shall first protect the gate and then inform on phone.
iv In which gate, emergency switch has been provide which helps to raised up the gate signal during any unusual occurrence at the gate. At this condition the gateman must be switch off the gate emergency.

The Gateman shall protect the line/ Gate as under-

a) **On double line section:**

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 line on which a train is expected to arrive first.
ii. Then he will similarly protect the other line.
iii. Gateman shall then proceed to protect the gate along with detonators, fusees 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 on the line on 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 meters level crossing gate and place 3 detonators on the track 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 on the other line, 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 driver of the approaching train.

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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.

ix. Thereafter, he shall light up and fix the fusee to warn the Loco Pilot and stop the approaching train by waving his red flag by day and red hand signal lamp by night repeatedly.

Note The Level crossing gates, which are located between outermost stop signals of the station, are exempted for placing the detonators as described in para (iv) above.

b) **Other action 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 Para (a) above.

ii. If the gate is broken by a road vehicle, which is fouling the track, or if lifting barriers/ leaf gates 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 vehicles, vehicle number, name of the loco pilot and owner and relay these details to the nearest Station Master or JE/SE/SSE/P. Way regarding the particulars and obstructions at the level crossing gate, through messenger or other means available.

1.6 ENGINEERING ITEMS:

For visibility requirements at level crossings, provision of speed breakers on the approach roads of level crossings and census of traffic at level crossings are described in Para 916, 918, 919 of IRPWM.

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ANNEXURE TO APPENDIX A(LX-494)

1.0 LEVEL CROSSING EQUIPMENT

The arrangements and the equipment provided at LX are given below.

1.1 **(a) Control Panel – Indoor** - It is provided with following indications:

- LX gate *to open* indication.

(b) Emergency Gate Signal Rotatory Switch

- Turn into clockwise to raise the Gate protecting Signals into danger position.
- LED (illuminated Red indication) to verify Signal Raising.

(c) Electrical key locking equipment is provided in the gate lodge with the following arrangement

- Electrical key locking equipment to lock the Key after closing the Sliding Boom
- Push Button to release the Key for opening the sliding Boom

(d) Control Panel – Outdoor

An outdoor control panel is provided at a suitable location at the Level Crossing Gate that provides clear visibility for the gateman of approaching road traffic. The outdoor control panel is provided with following indications and buttons

- Three indications, one indication for the 'opened' and one for 'closed' condition of the barriers - the third appears after closing of the gate and extinguishes immediately after the transfer of control by pushing the gate control button.
- Three push-buttons, one each for the closing and opening the barriers the third button is used as Acknowledge Push Button to transfer the gate control, after closing the gate and ensuring that the gate is clear of any road vehicles.
- Indication for availability of power for motor operation of the barriers.

1.2 Gate Road Traffic Signals

Road traffic signals are provided on tubular posts on each side of the LX for road users at a suitable location so as to be visible clearly to the approaching road vehicles. The road traffic signals shall show the following aspects:

- Steady red aspect to indicate the "CLOSED" condition of the road barriers.
- Steady yellow aspect to indicate the "OPEN" condition of the road barriers.
- Flashing yellow aspect to indicate that barriers are in the process of being opened.
- In case of emergency gate man will put the road traffic signal to "RED" aspect by turn the road signals switch to 'REVERSE' position from 'NORMAL' position provided on Indoor Panel.

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1.3 Hooters

Hooters, mounted on posts near each barrier pedestal and working in conjunction with the road traffic signals, are provided at the Level Crossing Gate to warn the road users of the imminent closing of the barriers while the barriers are being closed. The hooters shall cease sound when the barriers are closed.

1.4 Electrically Operated Boom Barriers:-

The boom barriers to be used will comprise of Electrical boom barrier mechanism with Barrier Pedestal. The barriers are fitted with a Stop Board, Boom Light box and MS counterweights. When closed, each boom barrier will rest on a boom barrier support and be locked in position by a boom locking system.

1.5 Sliding Boom Barriers:

The Level Crossing Gate is provided with one additional sliding boom on each side of lifting barrier. Each sliding boom will be in parallel to the existing lifting barrier of its side and would normally be so positioned that the complete body of the boom is lying away from the road i.e. no part of the sliding boom shall normally project on to the road leading towards Level Crossing Gate.

The Sliding booms installed are meant to be used in case of emergency when the lifting barriers are damaged or could not be closed due to any reason. These are normally locked on its post, with padlock. The keys inside the locks are provided on the Boom stands.

2.0 METHOD OF CLOSING AND OPENING THE ELECTRICALLY OPERATED GATE:

(a) The normal position of the gate is "Open" to road traffic. Whenever any train approaching towards the gate the **SM /AGC** shall advice the Gateman at Level Crossing **Gate 494** about the number, description, direction and likely time of passage of the train.

After passing the road traffic and ensuring that the road traffic is cleared between the two booms the Gateman shall close the Level Crossing Gate. The gateman shall press the gate closing push button on the outdoor control panel to close the gate for road traffic. The electrical lifting barrier booms start lowering and when barriers are at 5° from vertical, the road traffic signals displaying yellow will change to red, the hooter starts ringing "Barriers open" indications stop glowing on outdoor control panel. After lowering of the booms fully, third indication will be steady yellow to indicate Gateman to confirm that Level Crossing must be clear of road vehicles and all other obstructions. After ensuring that the Gate is clear of all kind of obstructions, Gateman should press third push button of outdoor control panel to lock the gate, the barriers get locked automatically by electrical lock provided on the boom meeting post and third indication will extinguish immediately. Now he will ensure that there is no any vehicle or any obstruction on track or between barriers then he will transfer control to the Station Master by pressing the acknowledge button on the gate operating panel to take OFF required signals. Barriers Close indication on the outdoor control panel gets lit. The Road signals display steady red and warning hooters stop to ring.

(b) After arrival/passage of the train, the SM on duty will release his control by VDU/Panel and a visual 'Free indication' will also be displayed at the gate for gateman to open the gate, on seeing the free indication ,the gate man will open the gate for passage of road traffic.

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(c) After seeing the free indication on panel, he shall then proceed to the outdoor control panel and operate "Open" push button. The boom barriers start going up and when the barriers are 2° from the horizontal the road signals display flashing yellow. Both barrier 'closed' and 'open' indications start flashing. When the barriers are at 5° from vertical, road signals display steady yellow. Barrier open steady indication is displayed.

3 (a) MODE OF OPERATION FOR CLOSING GATE BY SLIDING BOOM:

The gate is provided with one additional sliding boom on each side of power operated lifting barrier. Each sliding boom will be parallel to the existing power operated lifting barrier of its side and would normally so positioned that the complete body of the boom is lying away from the road i.e. no part of the sliding boom shall normally project on to the road leading towards the Level Crossing Gate. The Sliding booms installed are meant to be used in case of emergency when the power operated lifting barriers are damaged or close indication not found due to any reason. These are normally locked on its post, with padlock. The keys inside the locks provided on the Boom stands.

There can be the following conditions necessitating the use of Sliding Boom Barriers:

(i) When the gate barriers are damaged during opening / closing of the gate or the gate is in open condition.

(ii) Whenever the gate is broken during closing, opening or in open condition the gateman will inform the ASM on duty at controlling station who in turn will inform the S&T staff for rectification / replacement of the damaged lifting barrier gate / barriers.

(iii) When the close indication failed due to any reason.

The gateman, after getting specific instruction from ASM on duty of controlling station, will restrict the road traffic by closing the Sliding Boom. During this process he will put the road traffic signal to "RED" aspect by turn the road signals switch to 'REVERSE' position from 'NORMAL' position provided on Indoor Panel then he will slide the sliding boom of side "A" by pulling the handle to close position up to stand provided for the purpose. He will insert the chained key marked 'X' in the boom stand lock and lock it; a key marked 'Y' will be released, thereafter he will go to the other side 'B' and by pulling the handle to close position of the sliding boom up to its boom stand, will insert the chained key marked 'X' in the boom stand lock and lock it. Also insert the 'Y' key in the lock marked 'Y' and turn clockwise in boom lock stand of side 'B'. After locking both keys in 'B' side a third key 'Z' will be released. The gateman will take the key, apply it to the T-2 lock/KLCR fitted in the gate lodge and turn it. A Red LED lit up and a buzzer will sound at Operating Panel as after closing of Electrically Operated lifting barrier gate now gateman press Ack button after ensuring that no vehicle/obstruction in between sliding boom.Gateman will ensure that the sliding booms are locked properly and gate man will fix the Stop Board on each sliding boom pulled.IN case of emergency gate man will raised the gate protecting signals by turning the rotary switch provided in a glazed box at gate goomty wall.

(b)MODE OF OPENING THE SLIDING BOOM:

For opening of the sliding boom barrier, after passage of the train/trains, gateman will ge specific permission/Slot from SM on duty at Station to open the sliding boom barriers t clear the road traffic. After getting permission from SM, gateman will take out 'Z' key fron T-2 lock / KLCR, apply it in Sliding Boom of 'Z' lock and adopt procedure in reverse orde of closing the sliding boom to clear the road traffic.

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4.0 INTIMATION TO GATEMAN:

i) The Station Master shall intimate the Gateman, through telephone connected at his end about movement of trains proceeding towards the level crossing gate.

ii) The Gateman shall close the gate and he will ensure that there is no any vehicle or any obstruction on track or between barriers then he will transfer control to the Station Master by pressing the acknowledge button on the gate operating panel.

(iii) The reception/departure signals will then be taken 'OFF'.

(iv) In order to ensure that road traffic is not held up for a long time, the Station Master must ensure that the train is ready for departure in all respects before he advises the Gateman of closing the gate.

v) When a train has to be piloted to and from the station yard or any shunting movement is to be done, the staff deputed to pilot the train or to perform shunting across the gate shall be personally responsible to ensure that the gate is closed against the road traffic before allowing any movement across the gate.

5.0 Failure of Telephonic Communication:

When telephonic Communication fails or it does not get any response from the Gateman despite 2 or 3 attempts following procedure should be adopted.

(i) Station Master shall advise the Loco Pilot to whistle continuously and proceed cautiously while approaching the gate.

(ii) In case the gate signal is 'ON' he should stop short of the gate signal and follow the procedure laid down under GR 3.73 and 9.15(b).

(iii) In case of an approaching train, the Station Master shall advise the Station Master at the dispatching end, under exchange of private number that the telephone at the gate has failed.

(iv) The Station Master at the dispatching end shall then issue a caution order to the Loco Pilot before dispatching a train in the automatic block section from his end.

(v) Station Master should also advise S&T staff be responsible for maintenance of the telephone to rectify the same at the earliest.

(vi) Normal working will be resumed only after S&T staffs rectify the telephone and issue reconnection/fit memo for the same.

6.0 Failure of Electrical Operation of Lifting Barrier:

In case the barriers are inoperative due to Power Failure or due to any other reason, the Gate can be operated by using Crank Handle. The Crank Handle is kept in a sealed and locked glass front Box at the Gate. For operation by the Crank Handle, the Gateman will break the seal of the box and after unlocking the box, will take out the Crank Handle. The crank handle will be inserted in the Crank Handle hole provided on the Boom Padstel and will operate the barriers.

After breaking the seal of Crank Handle Box, the Gateman must inform to the Station Master, which will inform to S&T staff to rectify the defect and to Re- Seal the Box.

The record of the date and time of usage of Crank Handle shall be recorded and signed with reasons.

In case gateman fails to close the gate by using crank handle will operate sliding boom as per above para no 3. .

6.1 In case gateman fails to close the gate in spite of the above operations, he shall secure the gate against road traffic by means of chains and padlocks and pass the trains on hand signals and Gate will be treated as a non-interlocked gate.

7. **OBSTRUCTION AT THE LEVEL CROSSING GATE:-**

(i) if the gate is broken by a road vehicle which is fouling the track, or if lifting barriers/ leaf gates or any other part of the gate foul the track, or if there is any obstructions 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.

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(ii) Immediately after this, the gateman shall advice the Station Master/ Cabin master /Cabin man on duty regarding the defect/obstruction at the gate, under exchange of private number.

(iii) Station Master/ Cabin master/Cabin man on duty shall be advised to put the reception/ departure signal back to 'ON' position, if taken 'OFF' for a train.

(iv) If there is no response from the Station Master/Cabin master/ Cabin man after two or three attempts, he shall first protect the gate and then inform on phone.

(v) Gateman shall then rush with detonators, fusee, 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.1.5(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 loco pilot, owner and relay these details to the Station Master who shall not start the train unless he has been ensured by the Gateman that the road vehicle or the lifting barriers/ leaf gates are not fouling the track.

(viii) The Station Master shall also inform the station master at the dispatching end, under exchange of private number, asking him not to dispatch any train in 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 Station Master accordingly, under exchange of private number.

(x) Station Master shall then issue a Caution order to Loco Pilots of all trains to proceed cautiously, and pass the reception/departure signal at 'ON' position on green hand signal of the Gateman, if the gate is broken, but is clear of any obstruction. G/man will operate sliding boom as per prescribed procedure.

(xi) In case sliding boom also defective than Gateman shall secure the gate against road traffic by means of safety chains and padlocks and there after exhibit green hand signal, if the gate is not obstructed.

(xii) Station Master shall advice maintenance staff responsible for maintaining the lifting barriers/ leaf gates to rectify the same at the earliest.

(xiii) Normal working will be resumed only after maintenance staff rectify the defective lifting barriers/ leaf gates and issue reconnection / fit memo for the same.

8. **OBSTRUCTION ON THE TRACK NEAR LEVEL CROSSING GATE:-**

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, then the Gateman and Station Master will adopt the procedure given under item no.7. If the Obstruction fouls the level crossing gate. Gateman must keep the gates Closed against Road traffic till the track is cleared of the obstruction.

9. **PROCEDURE TO PUT BACK THE SIGNALS TO 'ON' IN EMERGENCY**

An emergency switch ,for put back the signal ON provided at gate sealed box . If after taking the signals 'OFF' the Gateman observes any obstruction or emergency on the track ,Gateman has to turn the emergency switch to 'REVERSE' position from 'NORMAL' position which will cause concern "OFF" signals to put back to 'ON'.

10. **Procedure to put the Road signals to 'ON' when Gate is open :-**

In the open condition of the Gate and Road signals in 'OFF' position if the Gateman requires to put the road signals to 'ON' position due to any emergency then the Gateman has to turn the road signals switch to 'REVERSE' position from 'NORMAL' position. The road signal will become 'ON' .

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WORKING OF THE ENGINEERING LEVEL CROSSING GATE- 493

1. GENERAL

1.1 DESCRIPTION OF LEVEL CROSSING GATES

No.	DESCRIPTION	REMARKS
1.	Number of level crossing gate and class.	493,class 'C'
2.	Engineering or traffic gate.	Engg.
3.	Under control of Station Master /section Engineer (P-way)	SSE/P.Way/Agra
4.	Location of KM.	1340/2-4(KM 1340.029)
5.	At Station.	---
6.	In between station.	AGC-BHA
7.	BG/MG/NG.	BG
8.	Single/Double/Mixed line.	Double line.
9.	Normal position.	Open to road traffic
10.	Interlocked/non interlocked.	Interlocked
11.	Means interlocking.	MACLS
12.	Provision of gate signals at KM.	DN-1339.849 UP-1340.209
13.	Signalling arrangement/system of signalling (i) Up line (ii)Dn line	DN SIG-A502 UP SIG-A513
14.	Means of communication-telephone/bell etc.	Telephone with SM Agra Cantt.
15.	Width of level crossing gate.	5.5 meters.
16.	Type of Road.(NH/SH/Others).	Others.
17.	Name of Road.	Tanra-Sevla
18.	Metalled/Non Metalled.	Packka
19.	Approach Road.	Packka
20.	Width of Road.	5.5 meters.
21.	Angle of Road Crossing (In case of skew gate).	Nil
22.	Road gradient (If any).	
	i) Toward N/E.	Level
	ii)Toward S/W	Level
23.	Road Alignment (Straight/Curve).	
	i) Toward N/E.	Straight
	ii)Toward S/W	Straight
24.	Provision of Height Gauges.	Yes.
25.	Type of barrier.	Power operated LB with SBB
26.	Length of check rail.	7.30 meters
27.	Road surface in between LC Gates.	Packka
28.	Length of rumble strip/speed barker.	Provided.
29.	Road Sign.	Provided.
30.	Speed braker indication board.	Provided.
31.	T.V.U.	106149(12/2022)
32.	Census next due on.	12/2025
33.	Demarcation for placement of detonators.	Provided.
34.	No. of gateman working.	03 (08 hrs shift)
35.	Nearest Railway Medical Assistance.	Dhaulpur / Agra Cantt.
36.	Nearest Private Medical Assistance.	Private.Hospital Agra
37.	List of equipment available. Yes/No	Yes.

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1.2 EQUIPMENT:

S. N	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) and 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 Quadruple/Line or twin single line and 5 on Hexaple section)
6.	Spare Chains with Padlocks	2 with stop mark.
7.	Detonators	10 in Plastic case
8.	Fuses	1
9.	Gate Lamps	-
10.	Tommy Bar	1
11.	Mortar Pan	1
12.	Spade/Fowrah.	1
13.	Hammer	1 (In case of asphalted road this may not be provided)
14.	Pick Axe	1 (In case of asphalted road this may not be provided)
15.	Tin Case for Flags	1
16.	Can for Oil	-
17.	Water Pot/Bucket.	1
18.	Canister for Muster Roll	-
19.	Set of spare Spectacles of Gateman wearing glasses	1
20.	Board demarcating protection of Level Crossing Gate diagram in case of obstruction on Gate	1
21.	Basket	1
22.	Whistle	1
23.	Wall Clock	1
24	Small chain in case of failure of lifting barriers/leaf gate	2

1.3 RECORDS TO BE KEPT AT GATE LODGE :

In addition to the above equipment, following records shall also be kept at the gate lodge:-

1 Gate Working Instructions in Hindi/English.
2 Gateman Rule Book in Hindi / English.
3 List for tools and books.
4 Duty Roster.
5 Certificate for working as gateman.
6 Bio-data particulars of Gatemen, including date of passing vision test, initial/refresher course, safety camp, etc.
7 Accident Register.

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8 Record of last census of road traffic at level crossing gate.
9 Public Complaint Book.
10 Inspection Book.
11 S&T register in case of interlocked engineering gate.

1.4 **MODE OF OPERATION**:-Booms of level crossing gate are opened simultaneously by Motor operated switch.

1.5 **DUTIES OF GATEMAN:**

1 **ALERTNESS:**

The gateman shall be alert and be prepared to take immediate action, should danger be apprehended. Keys of the gate shall be in his personal custody.

2 **POSITION DURING PASSAGE OF TRAINS:**

During passage of trains, gate man will stand in the manner indicated below:

i. Gateman will stand attentively in front of the gate-lodge facing the approaching train.
ii. In day time, gateman shall hold red and green flags furled up on separate sticks in right and left hands respectively
iii. In night time, gateman shall hold lighted hand signal lamp with while 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/ red light is placed across the track whenever the gate is kept in open condition at non-interlocked level crossing and during emergencies or obstruction on track at their type of gate.
ii. Gateman shall ensure the gate lamps and lamps of all gate signals 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 reliever arrives and takes charge of it. However, if it is necessary to leave the gate in an emergency, he must closed and lock the gates 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 Gate man shall also be prepared to repeat any signal while guard may give to loco pilot on walkie-talkie or in any other way.
vii If Electrical lifting barriers get damaged or becomes out of order, the gateman shall use the sliding Boom barriers.If both the Electrical Lifting Barriers & Sliding Boom 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
viii. Gateman shall report to the nearest Station Master, Gang mat or SE (P.Way) any defect in his gate or apparatus pertaining to it, as soon as possible.
ix. In the event of gate signal becoming defective the gateman shall maintain the signal in the 'ON' position even by disconnecting the signal or the wire if necessary.

x. At the gate whose signal have become defective, the gateman shall close and lock the lifting barriers on sighting a train and hand signal or pilot the train past the defective signal. In such case he should inform the loco pilot to report the defect at the next station.

xi. Gateman shall wear badge and prescribed uniform while on duty at level crossing gate.

xii. Gateman shall ensure that he is having competency certificate in his possession while on duty.

xiii. Gateman shall work the gate as per Gate Working Instructions and remain well conversant with these instructions.

xiv. Gateman shall ensure that equipment supplied at the gate is in good order and ready for immediate use.

xv. Gateman shall see that the channel for the flange of the wheel is kept clear.

xvi. Gateman shall keep the road surface well watered and rammed in case of un-metalled roads.

xvii. Gateman must be vigilant to see that inconvenience to road users due to closure of gates should be to the minimum possible extent.

xviii. Gate man on electrified section shall watch that road vehicle/animals passing from gate are within the height loading gauge provided on either side of the level crossing gate

xix. Gateman shall prevent tress passing by persons or cattle to the maximum extent.

4 <u>ACTION IN CASE OF UNUSUAL OCCURRENCE ON 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. But in case of train parting, gateman shall not show stop hand signal and shall show the prescribed signal for train parting i.e. green hand signal during day and white light during night weaving UP & DN vertically.

iii. 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.

iv If loco pilot /Guard fail to take notice, gateman shall immediately inform the Station Master. If connected on telephone, to take appropriate action, under exchange of private number.

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

i. In case of an obstruction at the level crossing gate, gateman shall maintain the gate signals, if any, in the 'ON' position. Gateman will press the emergency button for 2 sec. to put back signal into danger.

ii. Thereafter, if he is unable to remove the obstruction gateman shall immediately advise the Station Master on duty, if connected by telephone, regarding the defects/obstructions at the gate, under exchange of private number.

iii. If there is no response from the Station Master after two or three attempts, he shall first protect the gate and then inform on phone.

Iv Emergency switch has been provided which helps to raised up the signals taken off for any train during any unusual occurrence at the gate. At this condition the gatemen must be switch off the gate emergency switch.

The Gateman shall protect the line/ Gate as under-

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a) **On double line section:**

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 line on which a train is expected to arrive first.

ii. Then he will similarly protect the other line.

iii. Gateman shall then proceed to protect the gate along with detonators, 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 on the line on 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 meters level crossing gate and place 3 detonators on the track 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 on the other line, 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 driver 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 light up to warn the Loco Pilot and stop the approaching train by waving his red flag by day red hand signal lamp by night repeatedly.

Note The level crossing gates which are located between outermost Stop signal of the station are exempted for placing the detonators as described in sub-para (iv) above.

c) **Other action 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 Para (a) 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 vehicles, vehicle number, name of the loco pilot and owner and relay these details to the nearest Station Master or JE/SE/SSE/P.Way regarding the particulars and obstructions at the level crossing gate, through messenger or other means available.

1.6 **ENGINEERING ITEMS:**

For visibility requirements at level crossings, provision of speed breakers on the approach roads of level crossings and census of traffic at level crossings are described in Para 916, 918, 919 of IRPWM.

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ANNEXURE TO APPENDIX A (LX-493)

1.0 LEVEL CROSSING EQUIPMENT

1.1 (a) Control Panel – Indoor - It is provided with following buttons & indications: The arrangements and the equipment provided at LX are given below.

- LX gate to open/close indication.
- LX gate to Lock/Free indication
- ON and OFF aspect indication of UP & Down Gate controlling signals.
- Push Button (GN & UN) for UP & Down Gate controlling signals.
- Level crossing Barrier switch Open/Closed.
- ERN button & EGGN button
- UP and DOWN Train approach warning indications separately provided on the respective track.
- LX gate approach locked indications separately for UP & DOWN lines.
- Road signal switch.
- Power supply /Flasher indications.

(b) Electrical key locking equipment is provided in the gate lodge with the following arrangement

- Electrical key locking equipment to lock the Key after closing the Sliding Boom
- Push Button to release the Key for opening the sliding Boom

(c) Control Panel – Outdoor

An outdoor control panel is provided at a suitable location at the Level Crossing Gate that provides clear visibility for the gateman of approaching road traffic. The outdoor control panel is provided with following indications and buttons

- Two indications, one indication for the 'opened' and one for 'closed' condition of the barriers --
- Two push-buttons, one each for the closing and opening the barriers the
- Indication for availability of power for motor operation of the barriers.

1.2 GateRoad Traffic Signals

Road traffic signals are provided on tubular posts on each side of the LX for road users at a suitable location so as to be visible clearly to the approaching road vehicles. The road traffic signals shall show the following aspects:

- Steady red aspect to indicate the "CLOSED" condition of the road barriers.
- Steady yellow aspect to indicate the "OPEN" condition of the road barriers.
- Flashing yellow aspect to indicate that barriers are in the process of being opened.
- In case of emergency gate man will put the road traffic signal to "RED" aspect by turn the road signals switch to 'REVERSE' position from 'NORMAL' position provided on Indoor Panel.

1.3 Hooters

Hooters, mounted on posts near each barrier pedestal and working in conjunction with the road traffic signals, are provided at the Level Crossing Gate to warn the road users of the imminent closing/opening of the barriers while the barriers are being closed or opened. The hooters shall cease sound when the barriers are closed/ opened.

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1.4 Electrically Operated Boom Barriers

The boom barriers to be used will comprise of Electrically Operated boom barrier mechanism with Barrier Pedestal. The barriers are fitted with a Stop Board, Boom Light box and MS counterweights. When closed, each boom barrier will rest on a boom barrier support and be locked in position by a boom locking system.

1.5 Sliding Boom Barriers:

The Level Crossing Gate is provided with one additional sliding boom on each side of lifting barrier. Each sliding boom will be in parallel to the existing lifting barrier of its side and would normally be so positioned that the complete body of the boom is lying away from the road i.e. no part of the sliding boom shall normally project on to the road leading towards Level Crossing Gate.

The Sliding booms installed are meant to be used in case of emergency when the lifting barriers are damaged or could not be closed due to any reason. These are normally locked on its post, with padlock. The keys inside the locks are provided on the Boom stands.

2.0 METHOD OF CLOSING AND OPENING THE GATE

(a) This gate is provided with approach warning actuated by both UP and DN main line trains. On UP and Down sides of Main line section approximate 4 km approach warning distance is provided.

(b) The normal position of the gate is "Open" to road traffic. Whenever any UP/DN train is to be dispatched towards the Level Crossing the **SM/AGC** shall advice the Gateman at Level Crossing **Gate 493** about the number, description, direction and likely time of passage of the train. As soon as Gateman hears the approach warning sound OR is advised by on duty SM to close the gate, The gateman will start closing the gate after ensuring that the road traffic is cleared between the two booms of the gate so that there is no detention to the train. The gateman shall press the gate closing push button on the outdoor control panel to close the gate for road traffic. The electrical lifting barrier booms start lowering and when barriers are at 5° from vertical, the road traffic signals displaying yellow will change to red, the hooter starts ringing, "Barriers open" indications stops glowing on outdoor control panel. After lowering of the booms fully, Gateman to confirm that Level Crossing must be clear of road vehicles and all other obstructions. After ensuring that the Gate is clear of all kind of obstructions, Gateman should turn the OPEN/CLOSE switch in close position at indoor control panel to lock the gate, the barriers get locked automatically by electrical lock provided on the boom meeting post and locked indication will appear on indoor panel. The Gate man will take OFF UP/DN line signal as per requirement by pressing concern signal & route buttons at indoor control panel. The Road signals display steady red and warning hooters stop to ring.

(c) After passage of the complete train and when both Up and Down approach track are clear Gateman should turn the OPEN/CLOSE switch in open position at indoor control panel .Gate free indication will appear on indoor panel then gateman proceed to the outdoor control panel and operate "Open" push button. The boom barriers starts going up and when the barriers are 2° from the horizontal the road signals display flashing yellow. Both barrier 'closed' and 'open' indications start flashing. When the barriers are at 5° from vertical, road signals display steady yellow. Barrier open steady indication is displayed.

Note- Before open the gate, gateman has to ensure that the all concern gate protecting signals are at ON position.

3(a) MODE OF OPERATION FOR CLOSING GATE BY SLIDING BOOM:

The gate is provided with one additional sliding boom on each side of power operated lifting barrier. Each sliding boom will be parallel to the existing power operated lifting barrier of it's side and would normally so positioned that the complete body of the boom is lying away from the road i.e. no part of the sliding boom shall normally project on to the road leading to the L.C. gate. The Sliding booms installed are meant to be used in case of emergency when

the power operated lifting barriers are damaged or close indication not found due to any reason. These are normally locked on its post, with padlock. The keys inside the locks provided on the Boom stands.

There can be the following conditions necessitating the use of Sliding Boom Barriers:

(i) When the gate barriers are damaged during opening / closing of the gate or the gate is in open condition:

(ii) Whenever the gate is broken during closing, opening or in open condition the gateman will inform the ASM on duty at controlling station who in turn will inform the S&T staff for rectification / replacement of the damaged lifting barrier gate / barriers.

(iii) When the close indication failed due to any reason.

The gateman, after getting specific instruction from ASM on duty of controlling station, will restrict the road traffic by closing the Sliding Boom .During this process he will put back road signal to danger by turn the road signals switch to 'REVERSE' position from 'NORMAL' position provided on indoor panel then he will slide the sliding boom of side "A" by pulling the handle to close position up to stand provided for the purpose. He will insert the chained key marked 'X' in the boom stand lock and lock it; a key marked 'Y' will be released, thereafter he will go to the other side 'B' and by pulling the handle to close position of the sliding boom up to its boom stand, will insert the chained key marked 'X' in the boom stand lock and lock it. Also insert the 'Y' key in the lock marked 'Y' and turn clockwise in boom lock stand of side 'B'. After locking both keys in 'B' side a 3rd key 'Z' will be released. The gateman will take the key, apply it to the T-2 lock/KLCR fitted in the gate lodge and turn it. A LED lit up and a buzzer sounded at Operating Panel as after closing of Electrically Operated lifting barrier gate now gateman press Ack. Button after ensuring that no vehicle/obstruction in between Sliding Boom.

Gateman will ensure that the sliding booms are locked properly and gate man will fix the STOP BOARD on each sliding boom pulled.

3 (b) MODE OF OPENING THE SLIDING BOOM:

For opening of the sliding boom after passage of the train/trains, gateman will get specific permission from SM on duty or After passage of the train and when both Up and Down approach track are clear to open the sliding boom to clear the road traffic. After this, gateman will take out 'Z' key from T-2 lock/KLCR apply it in sliding boom of 'Z' lock and adopt procedure in reverse order of closing the sliding boom to clear the road traffic.

4.0 INTIMATION TO GATEMAN:

Whenever the gate is required to be closed for the passage of Up/Down trains, the Station Master on duty will advise the Gateman on duty the number, description and direction of the train and ask him to close and lock the gate against the road traffic in time.

(i) The Station Master shall intimate the Gateman through telephone connected at his end about movement of trains proceeding towards the level crossing gate.

(ii) If the telephone is connected to the station at the receiving end, advice shall be given by the Station Master to the Gateman, as soon as he receives Train Entering Section advice from the dispatching station.

(iii) If the actual running time of the train from either end of the section is less than 10 minutes, Station Master will convey this advice to the Gateman before obtaining/granting line clear.

(iv) It should be the duty of the Gateman to ensure that the gate is closed in time, so that there is no detention to the train or excessive detention to road traffic.

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Note:

1. When UP or DOWN "Approach warning" light is lit on the indoor panel it is advised not to open the gate. When the approach warning light is lit, the gateman will not attempt to open the gate ,except in emergency.
2. When UP or DOWN "Approach locking" light is lit on the indoor panel, it is not possible to open a closed gate. In case of emergency, it is possible to open the L-Xing even though the L-Xing is approach locked by using Timer 120 second time delay.
3. If a second train occupies the approach warning track circuit before the first train clearing the LX gate, no buzzer rings but the approach warning track continues to show occupied even after the first train clearing the gate lit until the last train clearing the LX gate.
4. After passage of a train if the gate is not opened before the second train occupying the approach track, the gate gets locked electrically without operation of gate control button by the gateman. Gate control button is to be operated for clearing the signal for the first train after closing.

5.0 Failure of Telephonic Communication:

When Telecommunication fails or it does not get any response from the Gateman despite 2 or 3 attempts, the following procedure should be adopted:

(i) If the telephone fails at the gate connected with the station at the dispatching end, Station Master shall issue written authority to the train to pass the signal at 'ON' position

(ii) In addition, Station Master shall also issue a caution order advising the Loco Pilot to whistle continuously and approach the gate cautiously.

(iii) The train loco pilot shall be instructed to pass the gate cautiously, on being hand signaled by the Gate-man If hand signal is not seen, loco pilot should be prepared to stop short of the gate and ensure that gate is closed following GR 3.73(2) (b

(iv) In case of an approaching train, the Station Master shall advise the Station Master at the dispatching end, under exchange of private number, that the telephone at the gate has failed.

(v) The Station Master at the dispatching end shall then issue a caution order to the Loco Pilot before dispatching a train in the block section from his end.

(vi) Station Master should also advise S&T staff responsible for maintenance of the telephone to rectify the same at the earliest.

(vi) Normal working will be resumed only after S&T staff rectify the telephone and issue reconnection/fit memo for the same.

6.0 Failure of Electrical Operation of Lifting Barrier:

In case the barriers are inoperative due to Power Failure or due to any other reason, the Gate can be operated by using Crank Handle. The Crank Handle is kept in a sealed and locked glass front Box at the Gate. For operation by the Crank Handle, the Gateman will break the seal of the box and after unlocking the box, will take out the Crank Handle. The crank handle will be inserted in the Crank Handle hole provided on the Boom Pedastel and will operate the barriers.

After breaking the seal of Crank Handle Box, the Gateman must inform to the Station Master, which will inform to S&T staff to rectify the defect and to Re- Seal the Box.

The record of the date and time of usage of Crank Handle shall be recorded and signed with reasons.

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In case.gateman fails to close the gate by using crank handle will operate sliding boom as per above para no 3.

In case gateman fails to close the gate in spite of the above operations, he shall secure the gate against road traffic by means of chains and padlocks and pass the trains on hand signals.

7.0. Defective GATE Signals protecting Gate:

Gate signals protecting this Level Crossing Gate.

(i) The Gateman shall treat the gate signals protecting this Level Crossing Gate, as defective under following circumstances:

(ii) If Gate Signals protecting Gate can be taken 'OFF' without closing the gate, or

(iii) If the Gate or the Signals protecting Gate or Warner/Distant Signal becomes defective in 'OFF' position, the Gateman will make all efforts to put it at 'ON' position.

(iv) The Gateman will immediately advise the Station Master on duty, under exchange of private number, regarding defective gate signals.

v) Thereafter, the gate must be treated as non-interlocked and reception and dispatch of train will be done under exchange of private number.

vi) He shall show green hand signal flag by day and green light by night to the passing train after closing the gate.

vii) Station Master on duty will issue a caution order to the Loco Pilot of a departing train.

viii) He shall also advise the Station Master at the dispatching end, under exchange of private number, to similarly issue a caution order to the drive before dispatching a train in the block section from his end.

ix) Station Master shall advise S&T staff responsible for maintaining the gate signal to repair the same at the earliest.

x) Normal working will be resumed only after S&T staff had rectified the defective gate signal and issued reconnection/ fit memo for the same

8.0 Obstruction at the Gate:

(i) If the gate is broken by a road vehicle which is fouling the track, or if lifting barriers/leaf gates or any other part of the gate foul the track, or if there is any other obstruction at the gate, the gateman shall immediately put back gate signals to 'on' position.

(ii) He shall fix banner flag by day and red lamp by night on posts provided at both ends of the gate for this purpose.

(iii) Immediately after this, the gate man shall advise the station master on duty regarding the defects / obstructions at the gate, under exchange of private number.

(iv) If there is no response from the station master after two or three attempts, he shall fist protect the gate and then inform on phone.

(v) Gateman shall then rush with detonators, 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.1.5(5).

(vi) Thereafter he shall protect the gate 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 station master who shall not start the train unless he has been assured by the gateman that the road vehicle or the lifting barriers are not fouling the track.

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(viii) The station master shall also inform the station master at the dispatching end, under exchange of private number, asking him not to dispatch any train in 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 station master accordingly, under exchange of private number.

(x) Station Master shall then issue a caution order to loco pilot of all trains to proceed cautiously and pass the reception/departure signal at 'ON' position on green hand signal of the gateman, if the gate is broken, but is clear of any obstruction. The gateman will close sliding boom in prescribed manners.

(xi) If sliding boom also defective than Gateman shall secure the gate against road traffic by means of safety chains and padlocks and there after exhibit green hand signal, if the gate is not obstructed.

(xii) Station Master shall advise maintenance staff responsible for maintaining the lifting barriers/leaf gates to repair the same at the earliest.

(xiii) Normal working will be resumed only after maintenance staff rectify the defective lifting barriers/leaf gates and issue reconnection/ fit memo for the same.

9.0 Obstruction on the Track near Level Crossing:

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 ASM will adopt the procedure given under item No.8 above. If the obstruction fouls the Level Crossing Gate, gateman must keep the gates closed against road traffic till the track is cleared of the obstruction.

10. Method of throwing the OFF signals in ON position :-

Normally:-

(i) After passage of train the gateman will operate barrier switch and press green button for opening the gate.

(ii) If gateman requires to throw the OFF signal in ON position then he will press ERN button with concerned signal button. Signal will come in ON position.

(iii) If gateman requires to throw all OFF signals (UP & DN gate protecting signals) in ON position simultaneously then he will press ERN button with EGN button.

In emergency:-

In any emergency gateman requires to open the gate while signals are in OFF position, then he will press ERN button with EGN button. ALL Signals will throw in ON position. Then gate man will operate the barrier switch in left side and press the green button to open the gate. But if DN &UP trains arrival indication is litting up then gate can be open after a time interval of 120 seconds on appearance of green indication on the panel.

11.0 Putting Gate Road signal at Danger in Emergency:

Any abnormal situation (for example broken gate) warning requirement to warn the road user, the first action gateman should do is to put the road signals to "ON" aspect. In order to do this, the Gateman has to turn the road signals switch to 'REVERSE' position from 'NORMAL' position. The road signal will become 'ON'.
After clearance of obstruction; normal working of the gate will resume.
At the same time, this all occurrence shall be informed to concern station.

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APPENDIX 'B'

1.0 STATION WORKING RULE DIAGRAM:

Working Rules diagram No. ..... dated ..... showing the layout of the yard, location and normal position of points and signals, extent of track circuiting, gradients and holding capacity of all individual lines names and distances of adjacent station.

2.0 BLOCK WORKING :

The system of working trains with the adjacent block stations is as follows:-

a) Automatic/Modified Automatic Signaling system are in use for block working on UP and DN lines between AGC-BHA and AGC-RKM The last stop signals permitting entry into the automatic signaling territory in the established direction are controlled by relevant track circuits. Automatic Signaling is achieved through axle counter.

Details are given in concerned Appendix H-1 and"H-2" to these rules.

b) Absolute Block system is in use for block working on single line section between AGC-IDH. The last stop signals permitting entry into the block section, which is controlled by continuous Track circuiting by means of DC track circuiting/Axle counter, Slotting.

c) Absolute Block system is in use for block working on single line section between AGC-NJPC. The last stop signals permitting entry into the block section, which is controlled by continuous Track circuiting by means of DC track circuiting/Axle counter, Slotting.

3.0 SYSTEM OF SIGNALLING AND INTERLOCKING :-

AGC is a 'SPL' Class station interlocked to Standard-III. The station is equipped with Multiple Aspect Color Light Signals & Points are Motor operated and also provided with Interlocked Crank Handle. All the points and signals can be operated by SM on duty from the VDU/Operating Panel provided in SM's office. Points and Signals are operated through interactive dialogue boxes appearing on the VDU screen OR push button operation through Operating Panel. Interlocking between points and signals is achieved electronically with operating VDU/ Panel. An illuminated diagram of yard controlled by VDU/ Panel showing the graphical position of points and signals appears on the VDU screen/Indication Panel. Normal operation like route setting and point operation are done by selecting options in signal/point/track menus OR push button operation of concern signal/point/track. Emergency release commands are through two pass command controls provided by VDU/Panel. Interlocking between points and signals are achieved through EI.

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i) **Station Master console VDU** consisting of a computer with a high resolution color monitor, keyboard and pointing device (mouse) is provided. Software is provided to display track mimic diagram of the station on the VDU and to access all functions through menus. When a function is selected, an appropriate guide format will be displayed along with pertinent information, to enter the correct command (Route request, point normal or reverse request etc.). VDU is provided parallel to panel to operate all functions similar to the operating- panel. The detail procedure of operation of ignaling gears through VDU is given in Annexure – B of Appendix – B.

In case of failure of Solid State interlocking unit a buzzer will ring. On duty SM need to press `ACK for system failure' and to mute the buzzer. Condition of SSI unit with its stand by will also appear on the panel board. Two lamps are provided to indicate the mode through which SM is operating signal and points and other control.

A separate auto block EI Local control panel in the form of VDU with standby arrangement is provided with SM/AGC for monitoring of auto Signaling towards BHA side of Station. The local control panel (VDU Auto Block EI) depicts the occupancy / vacancy of Axle Counter/Track circuits and Signal aspects either side Automatic Block Sections under control of the station & can perform resetting of Axle counters under his control when both Axle counter of same track section fail at a time through the VDU (Auto Block EI).

One standby OPC [VDU] properly wired up in hot standby mode is provided for emergency change over purpose. In case, first OPC malfunctions, automatic changeover takes place to second OPC instantaneously without any delay.
For detailed description of OPC [VDU] operations refer to Manual for working of SSI Station through OPC-VDU of this SWR.

ii. **Operating Panel** depicts the schematic reproduction of the entire track lay out of the area controlled by panel. All points and signals are geographically depicted on the operating panel. All the points, signals and controls are operated by means of push buttons located within the track layout diagram on the panel at their respective geographical position. Common group buttons, emergency operation buttons etc., are appropriately placed on the panel. SM in central cabin operates signals by pressing signal/ shunt signal button and concerned route button simultaneously and release. Normally all operations are two button operation except Cancellation of route which is a three button operation.

iii. **Indication Panel**: Indications, regarding setting of the points and setting of the route and signal aspects, controls given and received are given on the Indication panel. Indications of points, signals, track circuits / axle counter, Controls, slots etc.,are provided on indication panel. Different track circuit/Axle counters sections being painted in different colors in geographical layout.

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3.1 DETAILS OF SIGNALLING GEARS ARE AS FOLLOWS :

MAIN SIGNALS CONTROLLED BY PANEL/VDU			
S.No.	Signal No.	(A) Main Signals	Details
1	S1	spare	--
2	S-2	DN Main line Home signal	4 Aspect
3	S-3	UP Main line Advance starter	4 Aspect
4	S-4	DN Main line R/Home signal	4 Aspect with multi lamp route indicator.
5	S-5	UP Main line I/starter	4 Aspect
6	S-6	spare	--
7	S-7	UP line starter (Waiting way line)	2 Aspect
8	S-8	spare	--
9	S-9	spare	--
10	S-10	spare	--
11	11	Spare	-----
12	12	Spare	-----
13	S-13	spare	--
14	S-14	spare	--
15	S-15	spare	--
16	S-16	spare	--
17	S-17	spare	--
18	S-18	spare	--
19	S-19	spare	--
20	S-20	Spare	-----
21	S-21	UP Main line starter	4 Aspect with route
22	S-22	Spare	--
23	S-23	Common L/line No. 1 starter	2 Aspect with route
24	S-24	Spare	-----
25	S-25	spare	--
26	S-26	Spare	-----
27	S-27	spare	--
28	S-28	spare	--
29	S-29	spare	--
30	30	Spare	-----
31	S-31	Common L/line No. 2 starter	2 Aspect with Route
32	32	Spare	-----
33	S-33	Spare	-----
34	34	R&D Line No. 9 Starter	2 Aspect
35	35	Common Platform Line No. 3 Starter	2 Aspect
36	36	R&D Line No. 8 Starter	2 Aspect
37	S-37	Common Platform Line No. 4 Starter	2 Aspect .
38	S-38	DN R&D Line No. 7 Starter	2 Aspect
39	S-39	Spare	-----
40	S-40	DN R&D Line No. 6 Starter	2 Aspect with Route.

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41	S-41	PF NO. 4 UP I/Starter	2 Aspect
S.No.	**Signal No.**	**(A) Main Signals**	**Details**
42	S-42	DN R&D Line No. 5 Starter	2 Aspect with Route.
43	S-43	PF NO. 5 UP Starter	3 Aspect with Route.
44	S-44	DN R&D Line No. 4 Starter	2 Aspect with Route.
45	S-45	Spare	-----
46	S-46	DN R&D Line No. 3 Starter	2 Aspect with Route.
47	S-47	Spare	-----
48	48	DN R&D Line No. 2 Starter	2 Aspect with Route.
49	S-49	Spare	-----
50	50	DN R&D Line No. 1 Starter	2 Aspect with Route.
51	S-51	UP R&D Line No. 1 Starter	2 Aspect
52	S-52	Spare	-----
53	53	UP R&D Line No. 2 Starter	2 Aspect
54	S-54	Spare	-----
55	S-55	UP R&D Line No. 3 Starter	2 Aspect
56	S-56	Bay Platform No. 6 DN starter	2 Aspect with Route.
57	S-57	UP R&D Line No. 4 Starter	2 Aspect
58	S-58	Spare	-----
59	S-59	UP R&D Line No. 5 Starter	2 Aspect
61	S-61	UP R&D Line No. 6 Starter	2 Aspect
62	S-62	Spare	-----
63	S-63	UP R&D Line No. 7 Starter	2 Aspect
64	S-64	Spare	-----
65	S-65	UP R&D Line No. 8 Starter	2 Aspect
66	S-66	Spare	-----
67	67	UP R&D Line No. 9 Starter	2 Aspect
68	S-68	DN starter PF No. 5	2 Aspect with route
69	69	Spare	-----
70	S-70	Spare	-----
71	71	Spare	-----
72	S-72	DN starter PF No. 4	2 Aspect with route
73	73	Spare	-----
74	S-74	DN starter PF No. 3	2 Aspect with route
75	75	Spare	-----
76	S-76	DN starter PF No. 2	2 Aspect
77	77	Spare	-----
78	S-78	DN M/Line starter	4 Aspect
79	S-79	Spare	-----
80	S-80	Spare	-----
81	S-81	Spare	-----
82	82	Spare	-----
83	S-83	Spare	-----
84	84	Spare	-----
85	85	Spare	-----

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S.No.	Signal No.	(A) Main Signals	Details
86	86	Spare	-----
87	87	Spare	-----
88	S-88	Spare	-----
89	89	Spare	-----
90	S-90	DN I/Starter	4Aspect with route
91	S-91	Spare	-----
92	S-92	DN M/Line I/Starter	4 Aspect with route
93	S-93	Spare	-----
94	94	JNP DN A/Starter	2 Aspect
95	95	BXN UP Home signal	2 Aspect with multi lamp type Route Indicator
96	S-96	IDH DN A/Starter	4 Aspect
97	97	IDH UP Home Signal	2 Aspect with multi lamp type Route Indicator
98	S-98	DN M/Line ADV/Starter	4 Aspect
99	S-99	UP M/Line H/ Signal	4 Aspect with multi lamp type Route Indicator
100	S-100	Spare	-----

(B) SHUNT SIGNALS

S.No.	Signal No.	(B) SHUNT SIGNALS	Details
1	101	Spare	-----
2	102	DN Shunt signal on UP M/Line for shunting upto Washing Pit or upto Sh-134 or upto Sh-136 or upto Sh-138 or upto Sh-140 or upto Sh-142 or upto Sh-144 or upto Sh-146 or upto Sh-148 or upto Sh-108 or upto Sh-106 or upto Sh-116	Independent
3	Sh – 103	Spare	_____
4	Sh – 104	DN shunt signal on COD siding for shunting upto Washing Pit or upto Sh-134 or upto Sh-136 or upto Sh-138 or upto Sh-140 or upto Sh-142 or upto Sh-144 or upto Sh-146 or upto Sh-148 or upto Sh-108 or upto Sh-106 or upto Sh-116	Independent
5	Sh – 105	UP shunt signal below on S-5 for shunting in COD siding or upto S-3	Dependent
6	106	DN Shunt Signal on UP M/Line for shunting upto Sh-124 or upto Sh-118 or upto Sh-114	Independent
7	Sh-107	UP shunt signal below on S-7 on waiting Bay Line for shunting in COD siding or upto S-3	Independent
8	108	DN Shunt Signal on UP M/Line for shunting upto Sh-124 or upto Sh-118 or upto Sh-114	Independent
9	Sh-109	Spare	-----
10	Sh –110	Spare	-----
11	Sh-111	UP shunt signal on DN M/Line for shunting upto COD siding or upto S-3 or upto shunting neck.	Independent

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S.No.	Signal No.	(B) SHUNT SIGNALS	Details
12	Sh – 112	DN shunt signal on shunting neck for shunting upto Washing Pit or upto Sh-134 or upto Sh-136 or upto Sh-138 or upto Sh-140 or upto Sh-142 or upto Sh-144 or upto Sh-146 or upto Sh-148 or upto Sh-124 or upto Sh-108	Independent
13	Sh-113	Spare	-----
14	Sh-114	DN shunt signal on UP M/Line for shunting upto Sh-172 or upto Sh-174 or upto Engine siding or upto Sh-176 or upto Sh-178 or upto Sh-162 or upto Sh-160 or upto Sh-Salon siding.	Independent
15	Sh – 115	Spare	-----
16	Sh – 116	DN shunt on Waiting Bay Line for shunting upto Sh-120 or upto Sh-122.	Independent
17	Sh – 117	UP shunt signal on ART siding for shunting upto Sh-107.	Independent
18	Sh – 118	DN shunt signal on DN M/Line for shunting upto Sh-172 or upto Sh-174 or upto Engine siding or upto Sh-176 or upto Sh-178	Independent
19	Sh – 119	Spare	-----
20	Sh – 120	DN shunt signal on waiting bay line for shunting upto Sh-162 or upto Sh-160 or upto Salon siding.	Independent
21	Sh – 121	UP shunt signal below S-21 on UP M/L(NCR) for shunting upto SH-117 or upto Sh-107 or upto Sh-105 or upto Sh-111	Dependent
22	Sh – 122	DN shunt signal on ART Sidind for shunting up to Sh-162 or upto Sh-160 or upto Salon siding.	Ind ependent
23	Sh – 123	UP shunt signal below S-23 on Common loop line No.1 for shunting up SH-117 or upto Sh-107 or upto Sh-105 or upto Sh-111	Dependent
24	Sh – 124	DN shunt signal on common platform line No.5 for shunting up to SH-150 or up to SH-168 or up to SH-172 or up to medical van siding.	Independent
25	Sh – 125	UP shunt signal on salon siding for shunting up to Sh-117 or up to SH-107 or up to SH-105 or up to SH-111	Independent
26	126	DN Shunt signal on common platform line No.4 for shunting upto Sh-172	Independent
27	Sh – 127	UP shunt signal on common platform line No.5 for shunting up to Sh-105 or up to SH-111 or up to Shunting Neck.	Independent
28	Sh – 128	Spare	-----
29	Sh – 129	UP shunt signal on DN M/L for shunting up to Sh-105 or up to SH-111.	Independent
30	Sh – 130	DN shunt signal on washing pit cum inspection pit for shunting up to welding shop depot or up to SH-190	Independent
31	Sh – 131	UP shunt signal below S-31 on common loop line No.2 for shunting up to Sh-105 or up to SH-111.	Dependent
32	Sh – 132	DN shunt signal on oil siding for shunting up to welding shop depot or up to SH-190.	Independent
33	Sh – 133	UP shunt signal on engine siding for shunting up to Sh-105 or upto SH-111.	Independent

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S.No.	Signal No.	(B) SHUNT SIGNALS	Details
34	Sh – 134	DN shunt signal below S-34 on R&D line No.9 for shunting up to welding shop debot or up to SH-190 .	Dependent
35	Sh – 135	UP shunt signal below S-35 on common platform line No.3 for shunting up to Sh-105 or up to SH-111.	Dependent
36	Sh – 136	DN shunt signal below S-36 on R&D line No.8 for shunting up to welding shop debot or up to SH-190 .	Dependent
37	Sh – 137	UP shunt signal below S-37 on common platform line No.4 for shunting up to SH-105 or upto SH-111 or upto SH-139 or upto SH-141.	Dependent
38	Sh – 138	DN shunt signal below S-38 on R&D line No.7 for shunting up to welding shop debot or up to SH-190.	Dependent
39	Sh – 139	UP shunt signal on medical van siding for shunting up to SH-127 .	Independent
40	Sh – 140	DN shunt signal below S-40 on R&D line No.6 for shunting upto welding shop debot or up to SH-190 or up to SH-192.	Dependent
41	Sh – 141	UP shunt signal below S-41 on medical van siding for shunting up to SH-127.	Dependent
42	Sh – 142	DN shunt signal below S-42 on R&D line No.5 for shunting upto welding shop debot or up to SH-190 or up to SH-192.	Dependent
43	Sh – 143	UP shunt signal below S-43 on common platform line No.5 for shunting up to SH-127.	Dependent
44	Sh – 144	DN shunt signal below S-44 on R&D line No.4 for shunting upto SH-190 or up to SH-192.	Dependent
45	Sh – 145	Spare	-----
46	Sh – 146	DN shunt signal below S-46 on R&D line No.3 for shunting upto SH-190 or up to SH-192.	Dependent
47	Sh – 147	Spare	-----
48	Sh – 148	DN shunt signal below S-48 on R&D line No.2 for shunting upto SH-190 or up to SH-192.	Dependent
49	Sh – 149	Spare	-----
50	Sh – 150	DN shunt signal below S-50 on R&D line No.1 for shunting upto SH-190 or up to SH-192.	Dependent
51	Sh – 151	UP shunt signal below S-51 on R&D line No.1 for shunting upto SH-127.	Dependent
52	Sh – 152	DN shunt signal on stabling sIding for shunting up to MMU sdg. OR upto SH-156	Independent
53	Sh – 153	UP shunt signal below S-53 on R&D line No.2 for shunting upto ORD siding or up to S-3 or up to Shunting neck.	D ependent
54	Sh – 154	DN shunt signal on Bay line for shunting upto SH-156.	Ind ependent
55	Sh – 155	UP shunt signal below S-55 on R&D line No.3 for shunting upto ORD siding or up to S-3 or up to Shunting neck.	Dependent
56	Sh – 156	DN shunt signal below S-56 on Bay line for shunting up to SH-194 or upto S-98 or upto Stabling siding .	Dependent
57	Sh – 157	UP shunt signal below S-57 on R&D line No.4 for shunting upto ORD siding or up to S-3 or up to Shunting neck.	Dependent

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S.No.	Signal No.	(B) SHUNT SIGNALS	Details
58	Sh – 158	DN shunt signal on CS for shunting up to SH-194 or upto S-98 or upto Stabling line .	Independent
59	Sh – 159	Spare	-----
60	Sh – 160	DN shunt signal below S-60 on common loop line No.1 for shunting up to SH-160 or upto S-92.	Dependent
61	Sh – 161	UP shunt signal below S-61 on R&D line No.6 for shunting upto ORD siding or up to S-3 or up to Shunting neck.	Dependent
62	Sh – 162	DN shunt signal on UP M/L for shunting up to S-94 or upto S-98 or upto SB(washing pit line) or upto S-96 or upto S-92.	Independent
63	Sh – 163	UP shunt signal below S-63 on R&D line No.7 for shunting upto ORD siding or up to S-3 or up to Shunting neck.	Dependent
64	Sh – 164	DN shunt signal on Bay PF Line for shunting upto Sh-156	Independent
65	Sh – 165	UP shunt signal below S-65 on R&D line No.8 for shunting upto ORD siding or up to S-3 or up to Shunting neck.	Dependent
66	Sh – 166	Spare	-----
67	Sh – 167	UP shunt signal below S-67 on R&D line No.9 for shunting upto ORD siding or upto S-3 or upto Shunting neck.	Dependent
68	Sh – 168	DN shunt signal below S-68 on common platform line No.5 for shunting upto SH-190 or upto Sh-192.	Dependent
69	Sh – 169	UP shunt signal on washing pit cum inspection pit for shunting upto ORD siding or up to S-3 or up to Shunting neck.	Independent
70	Sh – 170	DN shunt signal A&D Siding for shunting up to SH-190 or upto SH-192.	Independent
71	Sh – 171	Spare	-----
72	Sh – 172	DN shunt signal below S-72 on common platform line No.4 for shunting up to SH-190 or upto SH-192 or upto S-90.	Dependent
73	Sh – 173	Spare	-----
74	Sh – 174	DN shunt signal below S-74 on common platform line No.4 for shunting up to SH-190 or upto SH-192.	Dependent
75	Sh – 175	UP shunt signal on MMU Siding for shunting up to Stabling siding.	Independent
76	Sh – 176	DN shunt signal below S-76 on common loop line No. 2 for shunting up to SH-192.	Dependent
77	Sh – 177	Spare	-----
78	Sh – 178	DN shunt signal below S-78 on DN M/L for shunting up to SH-192.	Dependent
79	Sh – 179	UP shunt signal on welding shed depot for shunting up to SH-159 or upto SH-161 or upto SH-163 or upto SH-165 or upto SH-167 or upto Sick siding or upto Oil siding.	Independent
80	Sh – 180	Spare	-----
81	Sh – 181	Spare	-----

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S.No.	Signal No.	(B) SHUNT SIGNALS	Details
82	Sh- 182	Spare	-------
83	Sh – 183	UP shunt near Pt.286 for shunting up to Sh-143 or upto SH-151 or upto SH-153 or upto SH-155 or upto SH-157 or upto SH-159 or upto SH-161 or upto SH-163 or upto SH-165 or upto SH-167 or upto Sick siding or upto Oil siding.	Independent
84	84	Spare	-----
85	Sh – 185	UP shunt near Pt.289a for shunting up to Sh-135 or upto SH-137 or upto A&D Siding or upto SH-143 or upto SH-151 or upto SH-153 or upto SH-155 or upto SH-157 or upto SH-159 or uptoSH161	Independent
86	186	Spare	-------
87	Sh – 187	UP shunt signal on DN M/L for shunting up or upto stabling siding or upto Bay line or upto SH-123 or upto SH-121 or upto Sh-129 or upto Sh-131 or upto Sh-185 or upto Sh-183 or upto Sh-129 in Yatri SDG-1 & 2 or upto SH-137 .	Independent
88	Sh – 188	Spare	-----
89	Sh – 189	UP shunt near Pt. 260b for shunting up or upto stabling siding or upto Bay line or upto Bay platform line or upto SC or upto SH-123.	Independent
90	Sh – 190	DN shunt below S-90 near Pt. 290a for shunting up to S-94 or upto Stabling line or upto S-98.	Dependent
91	191	Spare	-------
92	Sh – 192	DN shunt below S-92 near Pt. 290a for shunting up to S-94 or upto Stabling line or upto S-98 or upto SH-196 .	Dependent
93	Sh – 193	UP shunt on washing pit line for shunting up to SH-187.	Independent
94	Sh – 194	DN shunt on A&D Siding for shunting up to S-94.	Independent
95	195	UP shunt signal near Pt. 299b for shunting upto Sh-187 or upto Sh-185 or upto Sh-183 or upto A&D siding.	Independent
96	Sh – 196	Spare	-----
97	197	UP shunt signal near Pt.260b for shunting up to SH-189 or upto Sh-121 or upto Sh-129 or upto Sh-131 or upto Sh-185.	Independent
98	Sh – 198	Spare	-----
99	Sh – 199	UP shunt signal near Pt.296b for shunting up to SH-187 .	Independent
200	Sh – 200	Spare	-----

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(C) CALLING ON SIGNALS			
S. NO.	SIGNAL NO.	DESCRIPTION	DETAIL
1	C2	DN Calling ON Signal for upto S4.	Below DN Main Home signal S – 2 (BHA Side)
2	C4	DN Calling ON Signal for upto S34 or upto S36 or upto S38 or upto S40 or upto S42 or upto S44 or upto S46 or upto S48 or upto S50 or upto S68 or upto S72 or upto S74 or upto S76 or upto S78 or upto S60.	Below DN Main I/Home signal S – 4 (BHA Side)
3	C95	UP Calling ON Signal for up to S67 or upto S65 or upto S63 or upto S61 or upto S59 or upto S57 or upto S55 or upto S53 or upto S51 or upto S43 or upto S37 or upto S35 or upto S31 or upto S21 or upto S23 or upto Bay platform line.	Below UP Main Home signal S – 95 (NJPC Side)
4	C97	UP Calling ON Signal for up to S61 or upto S59 or upto S57 or upto S55, S53 or upto S51 or upto S43 or upto S37 or upto S35 or upto S31 or upto S21 or upto S23 or upto Bay platform line.	Below UP Main Home signal S – 97 (IDH Side)
5	C99	UP Calling ON Signal for up to S67 or upto S65 or upto S63 or upto S61 or upto S59 or upto S57 or upto S55 or upto S53 or upto S51 or upto S43 or upto S37 or upto S35 or upto S31 or upto S21 or upto S23 or upto Bay platform line.	Below UP Main Home signal S – 99 (RKM Side)

3.2 **Signal Route table with detection table**: Route table along with detection of points in the route, overlap and isolation of all Main signals, Calling-On & Shunt signals along with concerned signal & route buttons/command are given in Anneure A of Appendix 'B'

4.1 . **Functions and descriptions of various push buttons of the operating panel:**

a) **Main Signal / Shunt Signal Buttons (GN):**
Signal buttons (GN) provided near the concerned signal and is of 'Red' in colour for stop signal and 'yellow' in colour for shunt signal. The number of each signal button is inscribed near its location on operating panel. Whenever any signal is to be taken off the route button of the concerned line along with signal button is to be pressed simultaneously and released.

b) **Point Buttons (WN):**

i) Point buttons 'Blue' in colour are located on bottom end of operating panel.The corresponding point number is inscribed by its side. Normally points need not be operated individually to set the route. They automatically operate and set to the required position when the signal button and concerned route buttons are pressed and released

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ii) In case any point do not operate in the route, such point is to be operated individually, by pressing the group point button (WWN) along with the concerned point button (WN). When the point is set, the concerned 'slit' in the direction of point setting will get illuminated indicating by yellow light.

iii) When points are engaged and locked by a route, this will be indicated on the panel by small yellow light provided in round 'slit' near the points position indicating that points are not free for operation.

c) **Route Buttons (UN):**

Each Route Button (UN) is positioned appropriately on the panel and is 'Grey' in color. The number of each route button is inscribed near its location on operating panel whenever a signal is to be taken 'OFF', signal button (GN) and concerned route button (UN) are to be pressed and released.

d) **Control / Slot Button (YN):**

The Control / Slot button are provided for releasing controls (Crank Handle) on keys, locked in KLCR boxes, Ground Frame control & Gate control and Slot controls to adjoining stations for clearing their dispatch signals towards AGC.

The following Crank Control buttons are provided.

1. To release Crank Handle interlocking key of any CH group or to withdraw the which was given is to be done by pressing, the concerned CH group button (CHYN) along with common group slot button (GSB) or Group slot with drawl button (GSRB) as the case may be.
2. Ground Frame control button:1GF(1) grey in colour. To release the control to operate 1GF key locked point 1GF(1) or to withdraw the which was given is to be done by pressing IGF along with Group slot button(GSB) or Group slot with drawl button (GSRB) as the case may be.
3. Gate control button: 494XN grey in colour. To release the control to open the gate No.494 or to withdraw the which was given is to be done by pressing 494XN button along with Group slot button(GSB) or Group slot withdrawl button (GSRB) as the case may be.
4. Slot control button: To give control to Idgah or New Jn. Panel for their respective dispatch signals to dispatch trains to AGC side or to withdraw the which was given is to be done by pressing simultaneously concerned slot button (YN) gray in colour along with Group slot button (GSB) or Group slot withdrawal button (GSRB) as the case may be.

e) **Group Buttons:**

The Group Button are normally provided on the top of Operating panel and are required to be pressed simultaneously with the respective crossover points or signals or slot buttons.

The following are the nomenclatures, colours and descriptions etc. of the buttons.

Group Code	Button Colour	Functions
WWN	Blue	Group Point Button for individual operation of points/crossover. This button is to be pressed along with concerned point button for point operation, when track circuit clear for setting the point to the required position.
GSB	Grey	Group slot button for releasing slot to crank handle. To be pressed along with concerned control button.
GSRB	Grey	Group Slot Return Button withdrawing slot to crank handles. To be pressed along with control button.
COGGN	Red	Common Calling-On Signal Button for taking "off" the

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with Counter		Calling-On Signal. To be pressed along with the respective Home Signal button.
AGGN	Grey	Group button for introduction automatic working of signals
AGGRN	Grey	Group button for cancellation automatic working of signals

f) **Emergency Buttons:**

In addition to the points, signals, slots and group buttons, some emergency buttons are also provided for emergency use such as operation of points, when track circuiting controlling the points has failed, throwing signals to danger, cancellation of points section and releasing the route, when locked as well as the overlap, when the train is not on the approach track.

The following are the nomenclatures, colours and descriptions etc. of the buttons.

Group Code	Button Colour	Functions
EWN with counter on the operating panel	Blue	Emergency button for point operation for operating the point individually when the track circuit controlling the point has failed. Button remained sealed normally and is provided with counter "EWN" to count the number of operation.
EGGN	Red	Emergency Group Signal for throwing a signal/Shunt Signal to 'ON' in case of an emergency without SMs key in the panel.
Group Code	Button Colour	Functions
EUYN button and counter are provided on the operating panel. (Route release button when the track circuit has failed).	Gray	EUYN button are to be operated for canceling individual route, press EUYN button and the concerned signal button for 1st route section. EUYN counter counts each cancellation by EUYN button. For sub route release, press EUYN & concerned WN button. For 51T, 76T, 68T sub route released by EUYN and concerned signal button.
EUUYN button with counter on the operating	Grey	Emergency route release button is used for releasing the route and also overlap for a signal taken off if train has not passed the signal, to cancel a route of signal press concerned signal button and EGGN buttons, keeping signal button pressed, release EGGN and press EUUYN button, then release them. The counter counts each cancellation. It may take 120 seconds if approach track of signal is occupied.
OYN with counter	White	Overlap cancellation button. This is to be pressed with concerned signal button
ALL UNBLK	Grey	When both microlock failed, the panel is lock, then after restore the system. Yellow steady indication shown on panel, after press the ALL UNBLK button & yellow indication disappear, then panel working start properly.

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g) **Indication Buttons:**

Indication Buttons S/XYN, CH/XYN and P/XYN are provided for silencing bell/buzzer any Signal, Crank Handle or Points have failed.

The following are the nomenclatures, colors and descriptions etc. of the buttons.

Group Code	Button Colour	Functions
'S' XYN signal lamp LED failure buzzer silencing button	White	When any signal goes blank, a steady (S) indication appears along with buzzer. Operating the XYN button can silence buzzer but the indication will remain till the failure is put right. The concerned signal indication will also flash to indicate the failure of blank signal.
'CH' XYN point failure buzzer silencing button	White	In case of failure of Crank Handle, steady (CH) indication appears along with buzzer. Operating the button XYN can silence buzzer but the indication will remain till the failure is put right. The concerned point indication will flash to indicate failure.
'P' XYN point failure buzzer silencing button	White	In case of failure of point detection, steady (P) indication appears along with buzzer. Operating the button XYN can silence buzzer but the indication will remain till the failure is put right. The concerned point indication will flash to indicate failure.

Group Code	Button Colour	Functions
GBI (NNCR) Group button failure indication	Red indication	It is only a white light indication without button. Appears with buzzer when any of buttons in a group (i.e. signals, points and routes) Button on the panel fails to come back to normal position or when kept pressed for long time, when concerned group button released white indication disappears along with buzzer. Simultaneously concerned group indication also appears
GNCR button checking indication for signal button	Red indication	This indication will appear along with buzzer when any of the signal buttons fails to come back to normal or when kept pressed for long time, when concerned signal/signals button released this indication disappears along with the buzzer.
UNCR button checking indication for route button	Red indication	This indication will appear along with buzzer when any of the route buttons fails to come back to normal or when kept pressed for long time, when concerned route/routes button released this indication disappears along with the buzzer.
WNCR button checking indication for point button	Red indication	This indication will appear along with buzzer when any of the point buttons fails to come back to normal or when kept pressed for long time, when concerned point/points button released this indication disappears along with the buzzer.

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Note:

1) All cancellation facilities are provided with counter and that each number should be entered in the register specially provided for along with brief reasons for cancellation.
2) Button provided with seal SM on duty can break (EWN) (EUYN) & (OYN) but the JE/SSE/ESM on duty must be informed immediately for resealing the button.
3) Route cancellation is necessary for the release of the point's route section, when the whole route cancellation by means of EUUYN is not possible. EUYN cancellation is possible after breaking the seal of button (EUYN).
4) The SM on duty will be held responsible for all emergency operations done by him and it is to be explained in the special register giving corresponding numbers of the respective counters. The numbers on each counter will be registered in the Station Master's charge book while handing over and taking over charge of the panel.
5) Facility is provided to the SM on duty for operation of Motor operated points in case of failure of point controlling track circuits by means of 'EWN' button. Before breaking the seal of the button and operating the same, SM on duty should physically verify that the point track is not occupied by any vehicle and that the track concerned is intact and safe for the passage of the trains.
6) When one signal or point failure is already indicated and buzzer/bell already silenced, the second signal or point failure will not be indicated by the sounding of buzzer/bell. However, the respective signal or point failed will be flashing on the panel.

7) The audible buzzer sounded along with button checking indication can not be silenced unless the failure is put right. SM on duty should check for any of the buttons remaining in the operated/pressed condition and if so, the same should be released by him. JE/SSE/ESM on duty should be informed in case if he is not able to locate the faulty button.

4.2 Various indications on Indication panel:

a Point Indication:

The position of points is indicated on the control panel by the illuminated rectangular slits near the points on the panel. The normal setting of a point is indicated by the illuminated slit on the straight route and the reverse setting by illuminated slit on the diverting route. These slits will display a steady yellow light, if the points are properly set and the track circuit controlling the points is clear or a steady RED light if the track circuit controlling the points are occupied or have failed.

In the event of a point failing to set properly, this steady yellow light change in to yellow flashing light. The flashing light indication will also appear for a short period when the points are being moved from one position to other. The Station Master on duty should not mistake this as a point failure unless the flashing indication continuous for more than 10 seconds. No setting of route should be attempted over point showing flashing light.

b. Points Locking Indication:

When a route engages any particular point, this will be indicated on the panel by a small yellow light provided in round slit on the 'Point Position' indicating slit, indicating that the points are not free for operation. When this locking indication appears, the Station Master on duty must not interfere with the point.

c. Signal Indication:

The aspects of all signals are indicated on the indication panel, which indicates that the signals are illuminated at site.

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Signals	Status	Aspect at site	Indication on Indication Panel
Main signals	ON	Red	Red
	OFF	Yellow	Yellow
		Double Yellow	Two yellow indications
		Green	Green
Shunt signal Below main signal	ON	No light	No indication
	OFF	Two lights at 45 digrees	Yellow slit at 45 degrees
Independent shunt signals	ON	Two horizontal lights	Yellow horizontal slit
	OFF	Two lights at 45 digrees	Yellow slit at 45 degrees
Calling - On signal	ON	No light	No indication
	OFF	Miniature Yellow	Yellow circular slit below signal indications
Directional type Route Indicator	When given	5 Lamps in a row	Yellow vertical slit above concerned signal
Multilamp Route Indicator	When given	Multiple Lights in the form of Digit	Yellow vertical slit above concerned signal

d. **Route Indications:**

When a route is set by the operation of the signal button along with the concerned route button, yellow light will appear in the slits on the portion of the track circuited section covering the route up to the next signal and the overlap. When the route is thus set and locked, a circular yellow light near the concerned points in the route will indicate this. The yellow slit light on the track circuited portion will change into 'RED Light' when a train or vehicle occupies the track section and until the track is cleared again. After the passage of the train when the track circuited section is clear the yellow light will re-appear and will extinguish only when the route gets released.

In the case of Shunt Signals, the portion of route excluding the berthing tracks and non-track circuited portion will only be illuminated by the appearance of white route lights.

e. **Track Circuit / Axle counter Indication:**

1. All the track circuits and axle counter sections are marked in different colours on the track layout of controlled territory drawn on indication panel. Track Circuit indicators on the panel consist of yellow and red lamps/LED with in the track lines. Normally these indicators are not lit. When a route is set and locked, white light on all track sections of that particular route including overlap are lit.
Subsequently, when train occupies the track section or axle counter section, white lights extinguish and red lights are lit to indicate the presence of the train. Red light extinguishes and yellow lights are re-lit when the train travels and clears the track section. Yellow light finally extinguish when the corresponding route section is released automatically or by cancellation.

2. Failure of track circuit section is indicated on control panel by lighting up of red light of that particular track section irrespective of whether or not routes involving that track circuit section has been set. To prevent suppression of a track failure indication in case of an indication lamp failure, track circuit strip indicators are always formed with two or more indication lamp in parallel.

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f. **Flasher Indications:**

A continuous flashing indication has been provided at the top of the panel. Presence of this indication on the panel all the time will indicate to SM on duty that the flasher relay equipment is in working. Should that the equipment become faulty, this indication will become steady and accordingly even when the points are not set properly the flashing indication will not appear for that particular point and instead steady indication will appear, which is therefore misleading.

SM on duty should therefore check for this continuous flashing indication at the time the points are set for a movement and signal is taken off and it should be ensured that flashing indication is always there. Should this indication become steady all the points in the yard should be treated as defective and action under GR 3.77 and SR 3.77(1) and 3.77(2) should be taken for making movements over defective points and also crank handle operation should be done for reversing the points as the case may be. The Station Master on duty should advise to JE/SE/ESM for failure of continuous flashing indication.

g. **Point or CH control or Signal Lamp Failure indication:**

In the event of a Point failure or Crank Handle failure or Signal lamp failure, the concerned Point or CH Control or Signal indication on the Indication panel will change from steady light to a flashing light. In case of signal, if the Green indication only is flashing accompanied by yellow steady indication, this will mean that the green signal Lamp has been fused, but signal exhibiting restrictive off aspect. If the green flashing indication on the panel is also accompanied by the steady red indication, this will mean that the yellow lamp of the signal has also fused and the signal is exhibiting the 'ON' aspect. The failure of the red lamp, this will be indicated by XYN flashing on the panel accompanied by an audible alarm bell.

Failure of the signal lamp causes the concerned signal or signal in rear as the case may be to revert the next restrictive aspect as shown in the tabulated form. When a signal is become blank the audible alarm start ringing with the normal indication of the signal lamp flashing. On hearing such an alarm seeing the red flashing indication, the SM on duty should press the 'S' button in case of a signal lamp failure and 'P' button in case of point failure. And CH button in case of Crank Handle failure, Pressing of 'S' CH & 'P' will cause the alarm to stop but a permanent indication will remain till the failure is put right.

1. **Main Signal:**

S. No.	Aspect displayed before LED lamp failure		Particulars of lamp failure	Aspect displayed after signal lamp failure	
	By signal at site	By signal symbol on panel		By signal at site	By signal symbol on panel
1	Red	Red	Red lamp failed	Blank and signal in rear reverts back to ON aspect	Red flashing with XYN indication and audible alarm
2	Yellow	Yellow	Yellow lamp failed	RED	Flashing yellow with steady Red
3	Double Yellow	2 Yellow circular slits	Top Yellow lamp failed	Only bottom yellow burning & top Yellow blank	Flashing top Yellow and bottom Yellow steady.
4	Green	Green	Green lamp failed	Yellow	FlashingGreen with steady yellow

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h. Indication of prolonged Operation of Buttons:

If any button is kept pressed for more than 15 seconds the buttons normal detection indication (NCR) will appear on the panel. When this indication appears the button should be released immediately. If the NCR indication appears due to any button not returning to its normal position even after being released, the ESM should be advised by the panel operator on duty.

4.3 Panel operation:

For every operation on the control panel, two buttons have to be pressed simultaneously and released i.e. the signal button and the route button for setting route and clearing a signal or point and points group button for setting a point etc. CSM on duty must ensure that not more than two buttons are operated simultaneously at any time.

a. Operation of Points:

i. The points will remain in the last operated position.Normally points need not be operated for setting the route.They operate automatically while pressing signal button and route button. However in order to do independent operation of points either from 'normal to reverse' or from 'reverse to normal', individual point button (WN) and point group button 'WWN' should be simultaneously pressed and released which will cause the point to change over, provided the points are not engaged by any route and also the track circuit controlling the point is unoccupied.

ii. In the event of failure of the track circuit controlling the points, if the points have to be operated, the SM on duty will first has to get physically verified that the concerned track circuit is not occupied by any train or vehicle and then press the concerned point button (WN) simultaneously with the emergency point button (EWN) and release. Each time a point is thus operated, it will be recorded on the (EWN) counter. A register is maintained for EWN counter and each operation is recorded in it. The register has the same columns as mentioned for EUUYN and EUYN counter. SM on duty will immediately inform ESM/JE/SE to reseal the EWN button and make necessary entries in the register.

b. Operation of Main and Shunt Signal:

The Main Signal or Shunt can be taken off as the case may be by pressing the concerned signal button (GN) and route button (UN) simultaneously and releasing them, the points in the route, the points in the overlap if any and the isolation points should be automatically set to the required position, if not already in that position. Provided slot from the slotting agencies is received in case of slotted signals.

c. Operation of Calling-On Signal:

Calling-On-Signals are fixed on the same post and below main signal on the reception signal Nos. 2, 4, 95, 97 & 99 governing the admission of trains. it will show normally no aspect in 'ON' position and miniature yellow light in the 'OFF' position and is provided with 'C' marker which is a white enamel disc with letter 'C' in black.

In the event of failure of stop signal or due to failure of any track circuit in the route, it is not possible to receive a train by taking 'OFF' the Home Signal, but it can be received on Calling-On Signal. A train intended to be received on Calling-On Signal should be brought to a stop short of the Home Signal occupying concerned Calling-On track circuit C2T or 2BT or C95T or C97T or 134508DT (as the case may be). For clearing Calling-On Signal for a particular route, when Main signal is not clearing, press concerned Home Signal button with the COGGN button and then keeping signal button pressed, release COGGN button and press concerned route button then release both the buttons.

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(Yogesh Mittal)
SR.DSTE/Co./AGRA

A white approach lock indication will start flashing in a round slit near the concerned Home Signal on the panel. This will become steady after two minutes and simultaneously the Calling-On Signal will assume 'OFF' aspect at site and white indication will appear in the Calling-On round slit on the indication panel and the approach lock indication disappears. Each time the Calling-On-Signal is operated, it is recorded on COGGN counter.

d. **Semi auto signal control:-**

A semi automatic signal can be made to work as automatic by simultaneous pressing of AGGN button and the concerned signal button. Auto working of signal can be made as manual working by operation of signal button & AGGRN button on the panel.

4.4 Restoring signal to 'ON' and cancellation of routes:

4.4.1 Restoring signal to 'ON':

Whenever it is required to put back a signal to 'ON' position during an emergency or due to any other reason, this can be done by pressing the concerned signal button (GN) along with the emergency signal cancellation button (EGGN) and releasing them.

4.4.2 Cancellation of route already set when points zone track circuits have not failed (EUUYN) operation:

Ordinarily a route once set need not be cancelled as the same gets cancelled automatically by the passage of a train over the entire route and this is indicated on the control panel by the extinguishing of the route lights. However, should it become necessary to cancel a route already set due to any reason either before the passage of the train or due to route not getting automatically cancelled after the passing of the train SM on duty should first restore the signal controlling movement over the route to 'ON' as indicated (4.1.4 a) above. The SM will then press the concerned signal button and the emergency route release button (EUUYN) simultaneously and release.

This will release the route including the overlap provided no train has occupied the approach track circuit. However, if the approach track is occupied, the route will not be cancelled immediately but a route locked indication will appear on the route control indication (A small circular flashing yellow light) near the signal. The route locked (i.e. the circular white indication will remain till the stipulated time interval not less than 120 seconds for releasing of the approach locking has lapsed. Only after the circular yellow indication has disappeared the route should be cancelled by repeating the procedure as indicated above.

NOTE:

a) Each time the route is thus cancelled, it will be required on EUUYN counter.

b) In case, the circular yellow light indication near signal button extinguishes immediately or before the lapse of stipulated time interval (i.e. not less then 120 seconds) due to the failure of equipment the SM should wait for two minutes and then cancel the route in the usual manner. Further, the SM should report the failure to the ESM immediately and record the same in the S&T failure register.

c) In case one or more track circuit (s) is/are defective the particular route section covered by the defective track circuit will not get cancelled either by the passage of the train or by operation of (EUUYN) button. In such cases, the SM on duty after verifying by personal observation that the defective track circuit is not occupied by a train or vehicle will advise the ESM in writing giving the particulars of the route to be cancelled. The ESM and SM will then operate 'EUYN' button and concerned point button respectively for releasing the particular route section. The SM and the ESM will

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(Yogesh Mittal)
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maintain a register for recording the readings and other details of route cancellation with 'EUYN' button in the following Performa.

i) Sr. No.
ii) Date & time.
iii) Rout to be cancelled.
iv) Reason mentioning train No.
v) Signature of the SM on duty.
vi) Time route concealed.
vii) Reading of the EUYN counter after cancellation of the route.
viii) Signature of the ESM
ix) Remarks.

4.4.3 Cancellation of route when track circuit or points in the route are in failed condition (EUYN operation):

Normally, the route set gets released automatically after the passage of the train over the same, when track circuit or point in the route has not failed. But when a track circuit or point failed after the passage of train the route does not get released either automatically or by EUUYN (three button cancellation) .The route will now be canceled by another emergency operation called EUYN cancellation. The route gets cancelled after 120 second time delay. Therefore, this operation should be resorted to only after verifying by personal observation that a train or vehicle does not occupy the defective track circuit. In such cases, the SM on duty after verifying by personal observation that the defective track circuit is not occupied by a train or vehicle will advise the ESM in writing giving the particulars of the route to be cancelled. The ESM and SM will then operate 'EUYN' button and concerned point button respectively for releasing the particular route section.

4.5. Panel / PC Switch : -

This switch is required to be operated whenever the operator wants to switch over from the panel to VDU operation and vice versa. When SM on duty wants to change over from Panel to VDU then after going through Preliminary operations like switching on and opening of program etc. he will go through the procedure for change over from Panel to PC by giving PC request command in this position the White indication denoted as PC on Panel will start flashing. Now SM will have to changeover the Panel / PC switch from Panel to PC position. At this stage the panel will be disabled and the operations will be transferred over to PC as indicated by white steady light and for going back from PC to panel operations in reverse order are to be performed.

5.0 Counters:

a. **EUYN Counter:**

One counter has been provided on the panel for counting emergency route cancellation. This counter will increase the count with every operation of EUYN button for route cancellation. Sealing and locking arrangement is provided on this button. This cancellation will be recorded on a counter and in a register which will be maintained by Traffic representative. The description of the entries to be made in register is as given below:

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Sr. No.	Date	Time when button operated	Counter Reading		Reasons for operation of button.	Operated from panel / VDU	Signature of CSM on duty.
			Before operation of button	After operation of button			

b. **Calling-On signal counter:**
Calling-On counters provided on panel. This counter will increase the count on every reception made on calling on signal (COGGN) in either direction this operation will be recorded on a counter and in a register which will be maintained by Traffic representative. The description of the entries to be made in register is as given below:

Sr. No.	Date	Time when Calling-On Signal taken OFF	Counter Reading		Reasons for lowering of Calling-On Signal	Signature of CSM on duty.
			Before operation of button	After operation of button		

c. **Emergency route release:**
This counter has been provided on the panel for counting emergency route release. This counter will increase when route is released by operation of EUUYN buttons. This cancellation will be recorded on a counter and in a register which will be maintained by Traffic representative. The description of the entries to be made in register is as given below:

Sr. No.	Date	Time when button operated	Counter Reading		Reasons for operation of button.	Signature of SM on duty.
			Before operation of button	After operation of button		

d. **Emergency point operation:**
This counter is provided on the panel for operation of individual points in emergency or when track circuits fails by operation of EWN button. Sealing and locking arrangement is provided on this button. This cancellation will be recorded on a counter and in a register which will be maintained by Traffic representative. The description of the register is given below:

Sr. No.	Date	Time when button operated	Counter no.		Reasons for operation of EWN button.	Operated from panel / VDU	Signature of CSM on duty
			Before operation of button	After operation of button			

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e. **Emergency overlap release button:**

This counter is provided on the panel for releasing the overlap in case of emergency by operation of OYN button. This cancellation will be recorded on a counter and in a register, which will be maintained by Traffic representative. The description of the register is given below:

Sr. No.	Date	Time when button operated	Counter no.		Reasons for Overlap Release.	Signature of CSM on duty
			Before operation of button	After operation of button		

5.0 Emergency Crank Handle Box:

Two crank handles have been especially provided in the Central Cabin in the custody of SM for manual operation of Motor points either during failures or for maintenance. Two emergency crank handles (loose) are provided in emergency crank handle box in a glass framed case (sealed and locked), which is kept under personal custody of the SM on duty and crank handle is handed over to the competent traffic staff or to the S&T staff after making necessary entries in the register of crank handle along with the concerned NX key.

A. **Use of crank handle keys:**

Crank handles are used in association with crank handle keys (CH). When the crank handle key is inserted in the point machine, will electrically disconnect it before applying the crank handle. If crank handle keys are interlocked with signals so that once crank handle keys released from KLCR box, it should not be possible to take OFF the concerned controlling signal. Alternatively when a signal is given it is not possible to release the crank handle key from KLCR box for the point in the route to facilitate the flexibility the crank handles for points are grouped as per the requirement of operations. The groups are as under:

Sr. No.	Button Number	Colour	Point Nos.
1	CH-1	Blue	201a/b 203a/b.207a/b
2	CH-2	Blue	202.204a/b
3	CH-3	Blue	206a/b.208.209.210a/b
4	CH-4	Blue	212a/b.213a/b.214.215
5	CH-5	Blue	217.218.219.220.221
6	CH-6	Blue	224a/b.226a/b.227a/b
7	CH-7	Blue	225a/b
8	CH-8	Blue	230a/b.231a/b.233
9	CH-9	Blue	232a/b.236a/b.237
10	CH-10	Blue	235a/b.240a/b.241a/b
11	CH-11	Blue	243a/b
12	CH-12	Blue	228a/b.246a/b
13	CH-13	Blue	244.245a/b.247a/b
14	CH-14	Blue	262.263.264.265
15	CH-15		SPARE
16	CH-16		SPARE
17	CH-17		SPARE
18	CH-18	Blue	267.271.272.273

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19	CH 19	Blue	268a/b.270
20	CH-20	Blue	269a/b
21	CH-21	Blue	275a/b.277.280a/b
22	CH-22	Blue	274.279a/b
23	CH-23	Blue	283.284a/b.285a/b.286
24	CH 24	Blue	287.288.290a/b
25	CH 25	Blue	289a/b.292a/b.294a/b.295a/b
26	CH-26	Blue	259a/b.260a/b
27	CH-27	Blue	298a/b
28	CH-28	Blue	296a/b.297.299a/b.300
29	CH-29	Blue	255a/b.293a/b
30	CH-30	Blue	256a/b.257.258a/b
31	CH-31	Blue	252.253a/b.254a/b

For the points/crossovers which are less than 500m from central cabin the CH key groups are located in Central Cabin near panel. The points which are located beyond 500m from the central cabin the CH group are located at site near their respective goup of points. The groups are indicated in SWR diagram.

B. **Operation of crank handle groups:**

On the Operating panel one control unit for each group is provided which consists of the following.

a.	CH YN Buttons	For releasing or withdrawing the control on NX key.
b.	GSButton	For releasing control on NX key, GSB Button to be pressed and released along with concerned slot button.
c.	GSRB Button	For withdrawing the control on NX key, GSRB Button to be pressed and released along with concerned slot button.

i. Whenever crank handle operation of the points is desired the staff of traffic or S&T, obtains crank handle from SM on duty who should issue it after making necessary entries in the register.

ii. The staff concerned will go to the location of KLCR box either in panel room or at site as the case may be to take NX key for the concerned points. The SM on duty will press concerned CHYN button and GSB buttons and release them. The yellow indication near concerned CH button on panel will extinguish and Red indication will appear. Transmission of NX key control of crank handle will be indicating by the appearance of Red light on the key lock relay box. On seeing this Red light, the push button provided on the key lock relay box is pressed and the key turned through 90 degree in the clock-wise direction to extract the key.

iii. The staff takes the NX key thus released to the required point machine. After opening the key hole cover, NX key inserted and turned which makes opening for the insertion of the crank handle. The point machine now can be operated by rotating the crank handle. After the point is set and locked in the required position by the traffic in case of failure or after S&T work is over and after confirming from SM on duty the respective steady yellow point indication on the panel, the NX key is taken to relevant KLCR relay box. NX key is inserted and turned through 90 degree anti clock-wise and control is returned to the panel. On the panel, the Red light will disappear and white flashing light will appear above CH slot button.

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iv. The SM on duty on seeing this presses and releases GSRB and CH slot buttons on the panel and flashing white light will now become steady indicating the return of the crank handle control to panel.

v. The emergency crank handle is now returned to the SM on duty for his safe custody. Relevant entries in the register for use of crank handle should also be completed. Signal leading over affected points will be treated as a case of signal failure and train received or dispatched as per GR 3.69, 3.70, GR 3.77 and SR 3.77(1) to 3.77(3).

vi. In case the CH key is is not extracted from KLCR box the SM on duty can with- draw the given control by pressing concerned CHYN button and GSRB buttons simultaneously and release them. However once key is taken out of KLCR box SM cannot withdraw the given CH control.

vii. In case the key is inserted back in KLCR and turned but Station Master on duty does not get the control back on the panel after the proper operation of buttons which is treated as slot circuit failure.

C. **Use of Crank Handle for maintenance**:

Whenever it becomes necessary to use the crank handle along with the CH key pertaining to a particular group for general maintenance and repairs, authorized signaling official not below the rank of an maintainer should issue a disconnection notice on the prescribed form No. S&T/DN Annexure 'B' with an endorsement on the top indicating the point number for which the crank handle and CH key is needed. The endorsement is as under:
'Crank handle required for point No.___ & CH key required for group No.___ 'based on the above disconnection memo SM Central Cabin will issue the crank handle along with CH key of a concerned group and obtain the acknowledgement of the signaling official. An entry will be made in the crank register which will have the following columns.

1. Sr. No.
2. Designation of the person who required using the crank handle and the concerned cran handle key.
3. Date and time of removal of crank handle and the CH key.
4. Purpose, whether for normal maintenance or failure.
5. Disconnection memo number if given.
6. Signature of the persons who removes the crank handle.
7. Signature of the SM Central Cabin.
8. Date and time of return of the crank handle and the concerned crank handle key.
9. Details of the use made of the crank handle and CH key.
10. Re-connection memo number if given.
11. Signature of the of the signaling official
12. Trains passed over disconnected/defective points giving private number against each train.
13. Signature of the SM Central Cabin acknowledging the return of Crank handle & CH key.

Once the purpose of crank handle is complete the SM will then take back the CH key control by pressing concerned CH button and group slot withdrawal button (GSRB).

The crank handle will be re-fixed in the glass fronted case and get it locked and sealed, as laid down in para (A) and (B) above.

D. **Use of Crank Handle for opreration purpose**:

(i) In case of failure of a point, the point has to be set to the required position by using crank handle by the SM/Supervising SM on duty. He will then clamp the point and padlock it. He would keep the padlock keys in his personal custody and permit the train movement over the defective point.
He will make suitable endorsement to that effect in column (12) of the crank handle register in lieu of private number.

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(ii) When a point is taken for maintenance however no crank handle is necessary, an endorsement that 'Crank handle not required' must be made on the top of disconnection notice form S&T DN Annexure "B"

(iii) During the period of disconnection of a point the trains to be passed over it, the procedure as given in Sub para (i) above to be followed by SM/Supervising SM on duty.

7.0 Ground frame operated points:

One cross over located on bay PF line operated by a one lever of 1GF(1) which is controlled by a key which is electrically transmitted from operating panel Normally the control is with panel,which is indicated by a white steady indication near the concerned slot button.One KLCR key box is located at site near the cross over. The key from the KLCR box can be released only when SM Central Cabin gives slot by pressing concerned slot button (CHYN) & common slot button (GSB). With this operation the Yellow steady indication near control button will turn to flashing Yellow.Simultaneously control indication will appear near KLCR key box at site. On seeing the indication the concerned traffic official will take out the key to operate the point for shunting operation. On extraction of the key from KLCR box the Yellow flashing indication will disappear and RED steady indication will appear on the indication panel.

After the completion of the operation the key will be re inserted in the KLCR box and turned with this the RED indication on the panel will disappear and Yellow flashing indication will appear. SM on watching the flashing indication will press concerned control button (CHYN) and common slot withdrawal button (GSRB)

The entire above operation will be carried out by authorized traffic official in co-ordination with SM Central Cabin over the telephonic communication arrangement provided at site for this purpose.

8.0 Point / Trap Indicators: Trap indicator is provided on trap point of cross over on 1GF (11) on bay line. Red target during day time and RED indication during night time indicates the trap is open. Conversely the green target/Green indication indicates the trap is closed.

9.0 TRACK CIRCUITS

i) Yard is divided into suitable number of small track circuits (except non-interlocked lines) shown on SWR diagram and demarcated on the VDU/ panel. Indications for all these track circuits are provided on the VDU/ panel as per attached diagram.

ii) Complete yard is Track circuited in redundancy through DC track circuit /MSDAC (except non-interlocked lines) at this station as per diagram attached.

10.0. WORKING OF MULTI SECTION DIGITAL AXLE COUNTERS (MSDAC) :

Dual detection with Multi section Digital axle counters (MSDAC CELL Make & Eldyne make) are provided with existing track circuit, monitor occupied/clear position of respective track portion. as mention below.

10.1 Track circuit (with CELL make MSDAC):

South Zone track circuit –

2DXT,2A DXT, 2B DXT,3 DXT.4 DXT,5 DXT,201B DXT,203A DXT,206A DXT,207A DXT,207B DXT,210B DXT,225B DXT,226A DXT,226BT,227A DXT,227B DXT,228B DXT,235 DXT,240 DXT,241 DXT,244 DXT,245 DXT,246A DXT,246B DXT,247 DXT

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Birthing track circuit –
01DXT,02 DXT,03 DXT ,04 DXT ,06 DXT ,07 DXT /BT.
North Zone track circuit –56 DXT,68 DXT,76T,92 DXT,98 DXT,99 DXT,255A DXT,255B DXT,256 DXT,258B DXT ,259A DXT,259B DXT,260A DXT,260B DXT, 271 DXT,272 DXT,273 DXT,289B DXT,290B DXT,292 DXT,293A DXT,293B DXT,294A DXT,294B DXT,295 DXT,296A DXT,296B DXT.

Reset Box :
Reset boxes are provided in EI/SM room. On reset box one SM Key module is provided consisting one Reset Key and power ON indication (Yellow LED Small). one Reset Push button & an electrical counter (for counting the Nos. of Reset attempt carried out) is provided for each track portion the SM's Key is common for the all the Reset boxes used in respective track.
Following indication are provided on Reset box.

1	Section clear	Green LED(large size)
2	Section occupied	Red LED(large size)
3	Preparatory reset indication	Green LED(Flashing indication) (small size)
4	Line verification indication	Yellow LED(small size)

Line verification box (LV-Box):
08 nos. LV Boxes are provided near the existing track circuit in which 04 nos are provided in South Zone yard (LV1-2T,2AT,2BT,3T,5T,201BT.LV2-4T,203AT,206AT,207AT,207BT,210BT.
LV3-25BT,226AT,226BT,227AT,227BT,228BT &LV4-01T/AT/BT,02T/AT/BT,03T/AT/BT,04T/AT/BT,240T,241T,235T,244T,245T,246AT,246BT,247T) and 04 No.LV Box is provided near the existing track circuit in North Zone yard (LV5-255AT,255BT,256T,76T,292T,293AT.
LV6-06T/AT/BT,07T/AT/BT,68T,271T,272T,273T.LV7-258BT/259AT,259BT, 289BT,290BT,293BT,294AT,294BT,295T&LV8-56T,92T,260AT,260BT,296AT, 296BT, 98T,99T.).

Procedure for Manual Resetting of Axle counter (CELL MAKE):-
Manual Resetting is required in the event of failure of multi section digital axle counter. When axle counter is showing OCCUPIED indication, the following procedure of resetting of axle counter should be followed.
Before resetting of axle counter of concerned track circuit, It should be personally verified by Dy. SS on duty that concerned failed track circuit is free of all obstructions and no vehicle or train is standing on that particular track circuit.
After above said physical verification, Dy SS on duty will insert, turn and press the resetting key on Line Verification box in Location with lock & key, till Panel SM reset the MSDAC, Resetting keys of Line Verification Location Box will be kept in personal custody of Dy SS on duty. After getting a mini yellow indication of Line verification at Reset Box, Panel SM on duty at AGC SSI will reset the axle counter by inserting turning & pressing concerned Resetting key in SMs key module along with Reset Red push button simultaneously for sufficient time and release.

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After resetting of Axle Counter steady miniature GREEN indication of preparatory reset on reset box in AGC SSI appears but axle counter of that track circuit will show OCCUPIED RED indication which will change to CLEAR GREEN indication after passage of one train over that line.

Reset Box is provided with lock, the key of which shall be kept by Main SM on duty in his personal custody, if the manual or Auto resetting of any axle counter fails and CLEAR indication does not appear on the reset box after passage of one trains from the lime SM on duty shall inform ESM on duty about the failure. SM on duty at AGC SSI shall make an entry for every reset operation in a manuscript register for each line separately.

1- Reading on the counter before resetting.
2-Reading on the counter before resetting.
3-Number & description of the last train received on concerned line
4-Date & time the train cleared the concerned line
5-Whether it has been personally verified by SM on duty that concerned line is clear of any trains or vehicle.
6-Date & time the axle counter equipment is reset by the SM on duty.
7-Signature of the SM on duty resetting the axle counters equipment.

10.2 Track circuit (with ELDYNE MAKE MSDAC):

South Zone track circuit –
201aDXT, 203bDXT, 206bDXT, 209DXT, 210aDXT, 4aDXT, 21DXT, 224bDXT, 224aDXT, 212aDXT, 212bDXT, 218DXT, 219DXT, 213DXT, 214DXT, 215DXT, 225aDXT, 43DXT, 230DXT, 220DXT, 51DXT, 221DXT, 232DXT, 233DXT, 236aDXT, 236bDXT, 243DXT, 231DXT, GLDXT.

Birthing track circuit –
01RXT1, 02RXT1, 03RXT1, 04RXT1, 05RXT1, 06RXT1, 07RXT1, 08RXT1, 09RXT1.

North Zone track circuit-
263DXT, 264DXT, 267DXT, 268DXT, 274DXT, 269aDXT, 269bDXT, 279DXT, 284DXT, 277DXT, 280aDXT, 280bDXT, 289aDXT, 287DXT, 290aDXT, 299aDXT, 298DXT, 90DXT, 299bDXT, 94/95DXT, 253aDXT, 254DXT, BPDXT, 253bDXT, 286DXT, 285DXT, C95XT.

Reset Box :

Reset boxes for every track portion axle counters are provided in SM room. On reset box one SM Key module is provided consisting one Reset Key and power ON indication (Yellow LED Small). one Reset Push button & an electrical counter (for counting the Nos. of Reset attempt carried out) is provided for each track portion the SM's Key is common for the all the Reset boxes used in respective track.
Following indication are provided on Reset box.

1	Section clear	Green LED(large size)
2	Section occupied	Red LED(large size)
3	Preparatory reset indication	Green LED (small size)
4	Line verification indication	Yellow LED(small size)

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Procedure for Resetting of Axle counter(Eldyne Make) :-

In dual track detection tracks if axle counter only fails and the corresponding DC track circuit / another axle counter shown track clear, the system applies axle counter reset on its own without intervention of the SM. If the axle counter is ready to reset, the Green LED (small size) Preparatory reset indication appears on reset box. After passage of next train, Preparatory reset indication disappears at reset box, in case reset is successful.

In case the Axle Counter fails to reset by Auto resetting, facility to reset manually by Station Master through Reset box is provided. Manual resetting is preparatory reset. Before applying the manual reset the SM shall ensure that section being reset is clear of vehicles by observing track vacancy provided by DC track circuit or another axle counter as the case may be.

Manual Resetting is required in the event of failure of multi section digital axle counter. When axle counter is showing OCCUPIED RED (large LED) indication and respective DC track circuit /another axle counter showing clear indication and system is not accepting auto resetting, the following procedure of manual resetting of axle counter should be followed.

Before resetting of axle counter of concerned track circuit, It should be personally verified by SM on duty that concerned failed track circuit is free of all obstructions and no vehicle or train is standing on that particular track circuit.

After above said physical verification, SM on duty at AGC will reset the axle counter by inserting turning & pressing concerned Resetting key in SMs key module along with Reset Red push button simultaneously for sufficient time and release, flashing miniature GREEN indication of preparatory reset on reset box will appear.

After resetting of Axle Counter flashing miniature GREEN(small LED) indication will turn to steady miniature GREEN(small LED) of preparatory reset on reset box ,counter will be increased by 1 number but axle counter of that track circuit will remain OCCUPIED RED(Large LED) indication which will change to CLEAR GREEN (large LED) indication after passage of one train over that track portion.

Reset Box is provided with lock, the key of which shall be kept by Main SM on duty in his personal custody, if the manual resetting of any axle counter fails or CLEAR indication does not appear on the reset box after passage of one train from the respective track portion, SM on duty shall inform ESM on duty about the failure. SM on duty shall make an entry for every reset operation in a manuscript register for each track section separately.

1- Reading on the counter before resetting.

2-Reading on the counter after resetting.

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3-Number & description of the last train received on concerned line

4-Date & time the train cleared the concerned line

5-Whether it has been personally verified by SM on duty that concerned line is clear of any trains or vehicle.

6-Date & time the axle counter equipment is reset by the SM on duty.

7-Signature of the SM on duty resetting the axle counter equipment.

11.0 GENERAL INSTRUCTIONS:

a] When a light diesel engine or any other light self-propelled vehicle is to be passed over a point or cross over controlled by a Track Circuit, the SM on duty must in addition to watching the track circuiting on the Control VDU/PANEL, ensure through visual verification that the diesel engine etc. has cleared the concerned Track Circuit and has entered the next track section before interfering with the Points set for the previous move or before permitting any other move on the affected lines.

b] In the event of failure of points and/or signals, intimation of the failure should be given by the SM on duty to the Signal Maintainer of the Station on duty and SSE (Sig.).

c] While issuing an Authority to pass a defective signal in 'ON' position, protecting facing points, endorsement should be made thereon instructing Drivers to observe speed restriction of 15 KMPH till whole of the train has cleared the facing points in the Route.

d] The VDU/ panel is provided with a Station Master's key to prevent unauthorized operation of points and Signals. Normally, all the buttons of the Control VDU/ panel are ready to be operated at any time unless the SM on duty locks them by means of the SM's key.

e] After completion of each movement, the Point should be restored to their normal position.

NOTE: When the Control VDU/PANEL is locked, it will not be possible to operate point or clear a signal. But a cleared signal can be put to 'ON' aspect by clicking the concerned Signal and ERN. Similarly, a route already set also gets automatically cancelled after the passage of the train. The SM on duty must keep the key in his personal custody whenever he has to leave the VDU due to any reason.

11.1 It must be ensured that the Dip lorries/ Material trolleys/ Motor trolleys/ Push trolleys are invariably worked after obtaining specific permission of SM on duty under clear Memo. When the Trolley has been removed 'OFF' the track, such removal shall be confirmed by the Officer In-charge in writing to SM on duty.

11.2 Movement of the insulated Axle of the trolleys will not affect the functioning of track circuit.

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11.3 ADDITIONAL PRECAUTIONS TO BE OBSERVED: -

Button collars command shall be placed on the defective/disconnected point and the relevant route button. The button collars command should be removed except under the following circumstances: -

a) When the disconnected point is reconnected and reconnection memo to this effect is received or,

b) When the defective point has been put right and advice is received or,

c) When the SM to undertake a move after he has personally ensured the correct setting clamping and pad locking of the points and the keys are in his personal custody or,

d) When the special duty guard authorize the SM to undertake the movement over the points supported by a private number.

12.0 WORKING OF TRAINS DURING FAILURES:

(A). PASSAGE OF TRAINS WHEN MOTOR POINTS ARE DEFECTIVE :

(a) When a motor point fails to respond to the VDU/Panel operation, the VDU/Panel SM should first reset the points to the point to the last operated position and advise the DY.SS/,SM/INDOOR. The DY.SS/SM concerned will obtain the Crank Handle, clamp with pad lock/portable phone if necessary and proceed to the points.

(ii) The DY.SS/concerned SM on arrival at the concerned point will see if any obstruction between the stock and switch rails at both ends in case of cross over point, remove the same if found any and advise the VDU/Panel SM accordingly.

(iii) On receipt of the above advise from concerned Indoor SM/DY.SS/concerned VDU/Panel SM MTJ will set the points to the required position through VDU/Panel. If the point still fails to respond, he will advise the SM at site accordingly, intimate him about the move, under the exchange of private number and also release his control on Crank handle key. The SM at site will then set the defective points in the required position, manually clamp and pad-lock it, extract the Crank Handle and retain the keys and Crank Handle in his personal possession, return the Crank Handle key control, advise the VDU/Panel Panel SM accordingly and exchange private numbers in token of this. The VDU/Panel SM will then under take the move after compliance of extent rules.

NOTE :

(i) While setting a cross over point from normal to reverse care should be taken to set the end marked 'A' first and then the other end marked 'B'. Similarly white setting from reverse to normal end marked 'B' should be set first and then the end marked 'A'.

(ii) In case after setting the point manually, the relevant 'N' or 'R' indication is available on the panel and if the requisite route can be set for the move and the signal clears, clamping and padlocking of the points is not necessary. If the ESM is available, he will assist the Operating Staff at site in manual setting of points.

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(B) **PASSAGE OF TRAINS WHEN POINTS ARE DISCONNECTED** :

While the S&T staff are attending to disconnected/defective points and traffic has to be passed over them, the concerned SM/DY.SS on duty will proceed to the concerned points with the object of getting the points set by the S&T staff. He will take with him a special register opened for this purpose in which an entry of the move will be made and the signature of the S&T staff concerned attending to the points will be obtained against that entry, as an assurance that the S&T staff has agreed to the move.

The SM at site will also sign against that entry. After the points have been set for the contemplated move, the DY.SS/SM will clamp and padlock the facing points, retaining the keys and crank handle in his personal custody return the crank handle key control, advise the VDU/Panel SM accordingly and exchange private number in token of this. The VDU/Panel SM will then under take the move. After the passage of traffic, the SM at site will return the Crank Handle, Crank Handle keys and the padlock keys to the S&T staff for continuing their work on points.

NOTE :

i) In order to avoid detention to traffic, S&T staff will draw up a maintenance program in consultation with operating staff so as to enable the latter to book DY.SS or other special duty staff, to ensure the correct setting clamping and padlocking of points. When such staff is available at site the VDU/Panel SM will advise him about the movement required to be made and exchange private number in token of the same. The operating staff after getting the points set clamped and padlocking as maintained above will authorize the VDU/Panel SM on duty under the exchange of private numbers to undertake the move.

ii) When-ever points or signals do not obey the commands of operation from the CTL cabin, the VDU/Panel SM will at once inform JE/SSE/ESM on duty. The JE/SSE/ESM will immediately conduct checks and if possible rectify the defect to enable resumption of normal operations.

The JE/SSE on duty will investigate the defect quickly and intimate his conclusions to the VDU/Panel SM to enable the latter to take recourse to alternative action.

In case the rectification of defect takes longer duration of time, the VDU/Panel SM will reset to manual setting, clamping and padlocking of points and issue of necessary written authority to pass defective signals.
NOTE: In the case of disconnected/defective points, the setting of the other end or ends where the work is/are not carried out will be done by the Dy SS/ Concerned SM on duty.

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C) **WORKING OF TRAINS DURING THE FAILURE OF TRACK CIRCUITS WHEN THE 'CALLING ON' SIGNAL HAS ALSO FAILED**

The VDU/Panel SM CTL cabin will advise the Dy SS/SM/ Indoor.

i SM regarding the failure of the track circuit and the later will proceed to the affected track circuit along with a points man and a portable telephone. The SM Dy SS/ Concerned SM after verifying that the defective track circuit is not occupied, will advise VDU/Panel SM CTL cabin accordingly, supported by a Private number. On receipt of this advise supported by a private number, the VDU/Panel SM will set the required route and BLOCK the signal . After verifying that the concerned points for the required is correctly set and locked and all the required track circuits other than the track circuit certified by the Concerned SM are clear will issue./authorize the issue of authority on form no T-369(3b)to the driver to pass the signal at 'ON' position, the route for which T-369(3b)is issued should not be cancelled until the entire section including the overlap of the concerned signal is cleared by the train except in the case of trains arriving on platform lines, the route may be cancelled after the complete arrival clear of track circuits controlling points in the rear.

ii. Movements affected by track circuit failures should not be done simultaneously over the crossovers. Simultaneous movements are permitted on the straight routes only under such circumstances.

iii. While issuing T-369(3b) to the drivers , an endorsement imposing speed restriction of 15 KMPH up to the next signal should be made on it.

iv. In case of the route cannot be initiated due to any reason the VDU/Panel SM CTL cabin will operate the points concerned in the route to the required position by VDU/Panel operation and after verifying from the VDU/Panel indication about their correct setting will instruct the Dy SS/ Concerned SM to clamp and padlock all the facing points in the route. After receiving assurance from the Dy SS/ Concerned SM in this respecting supported by a private number. SM CTL cabin will issue or authorize to issue of T-369(3b) for the signal passed at 'ON' provided the clearance of the concerned track circuit has been verified either form the VDU/Panel or through the Dy SS/ Concerned SM on duty supported by a private number.

14.0 AXLE COUNTER IN AUTOMATIC SECTIONS:

(i) UP and Down Main Line is continuously monitored by axle counters in addition to DCTC track circuits from AGC to RKM station and provided with Automatic Signals.

(ii) UP and Down Main Line is continuously monitored by DUAL axle counters (MSDAC) from AGC to BHA station and provided with Automatic Signals.

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14.1. FAILURE & RESETTING OF DIGITAL AXLE COUNTERS IN AUTOMATIC SECTION IN BETWEEN AGC-RKM SECTION IN UP & DN DIRECTIONS:-

A) FOR AGC-RKM SECTION DN MAIN LINE-

The indication is provided on indication panel/VDU of each section in the SMs office BFP in which the one common indication is provided for the digital axle counter sub sections between **AGC-RKM** on DN Main line. The section 'OCCUPIED' indication will appear whenever there is any one or more train in the section. The section 'OCCUPIED' indication will also appear whenever there is axle counter failure of any axle counter sub section for digital axle counter sections. One common TPR indication is provided for each DCTC track circuit sub section. If there is a failure of DCTC track circuit sub section the signals will be controlled by digital axle counters automatically and signal will work properly. In case failure of any DCTC track section/Sub section ,The SM will advise section controller and concern P.Way and S&T staff of the station on the MTRC/CUG/ written memo giving details of track circuit failure based on track circuit failure indication on VDU /Indication Panel provided in SM's room then SM will issue a caution order to the train driver to pass the concern failed DCTC section cautiously till either after track circuit (AFTC/DCTC) picks up & failure indication vanishes or after the same is rectified by S&T staff or after advise of P-Way staff.

If there is a failure of digital axle counter sub section only, the signals will be controlled by DCTC automatically and trains will run on proper signals. In this case the failed digital axle counters will be auto resetted by clearance of DCTC track circuit. In case of failure of digital axle counter, it will come in preparatory reset mode after the 'Auto reset' is applied through external circuit on its own without the intervention of the SM and yellow ind. will glow showing indication of preparatory reset and after passing first train it will be clear and will show Green indication on panel /VDU/Reset box. If the automatic resetting is not taking place, on duty SM will give message to the S&T staff for its failure and go for manual resetting. However, if both DCTC & axle counter of one section have failed, this will cause concerned automatic/semiautomatic signal to exhibit 'ON' aspect and trains will run as per GR 9.02 and 9.02/1 of G&SR.

(ii) Normal resetting by the resetting key shall be resorted when the DN Main or UP main line track circuit 'Clear' indication is there.

(iii) The SM on duty of **AGC** having come to know that the axle counter of DN main line has failed, by seeing the **AGC-RKM** DN section 'OCCUPIED' indication on digital axle counter sections even when DCTC sub section is clear or not accepting auto resetting then manual resetting of the axle counter will carry out with the assistance of SM **RKM** for DN line when the traffic permit.

(v) Resetting for DN direction by the SM on duty at **AGC** shall not be done unless it has been ensured by him that:-

a) The DN Main line between **AGC-RKM** is clear of all trains.

b) He has confirmed from the on duty main **SM RKM** about the complete arrival of the last train at his end, dispatched by SM **AGC** in the section supported by a private number.

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vi) SM on duty/AGC will then ask main SM on duty at SM **RKM** to assist in resetting the axle counter on DN main line by pressing the Co-operative push button for DN direction **AGC** side provided there. He will also simultaneously press the Axle Counter reset button depending on the track circuit clear indication for DN direction by inserting the key and turning it.

A button pressed indication will appear on the indication panel/Reset box provided with SM **AGC** as soon as **SM RKM** presses the Co-operative button for DN direction and buzzer will ring at both ends confirming the resetting operation in processes. The yellow ind. will glow showing indication of preparatory reset and after passing first train it will be clear and will show Green indication on indication panel/VDU/Reset Box

After passing a train, will cause display of **AGC-RKM** DN line "section clear" indication at digital AXLE COUNTER indication/Reset box for **RKM** side and each resetting will be counted in the counter provided with SM **AGC** reset box. The SM **AGC** shall release the reset button on seeing the "section clear" INDICATION and advise main SM on duty at **RKM** to release the Co-operative button.

vii) In case the **AGC-RKM** DN Line section fails to reset i.e. "Section OCCUPIED" indication still appear after resetting in accordance with above paras, the ESM on duty shall be called by the SM to attend the failure of Axle Counter giving him the particulars of the signal failed.

The ESM after rectifying the fault of the defective axle counter inform the SM **AGC** about the put right of Axle Counter.

On receipt of this information from ESM about the put right of axle counter the SM/**AGC** at **AGC** will again reset to the axle counter as per above paras and obtain the "Section Clear" indication, resulting normal working.

The SM on duty at **AGC** shall make entry for every button operation carried out for resetting the axle counters on DN M/L between **AGC-RKM** in a manuscript register, separately for normal resetting operation of each section.

a) Reading in the counter before resetting.

b) Reading in the counter after resetting.

c) No & description of the last train dispatched on DN main line between **AGC-RKM**

d) Date & time the last train cleared **AGC-RKM** ***section***..

e) Private number received from SM on duty at **RKM** confirming the complete arrival of the last train at **RKM** for the DN main line and the section between **AGC-RKM** on DN Main line is clear of trains.

f) Date & time the axle counter equipments are reset by the SM on duty at **AGC.**

g) Signature of SM on duty resetting of axle counter equipment.

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B. **FOR RKM-AGC SECTION UP MAIN LINE-.**

i) On enquiry from the on duty SM **RKM** the SM on duty at **AGC** will confirm about the complete arrival of the last **UP** train dispatched from **RKM** supported by private number and enter in the train register.

ii) SM on duty at **AGC** shall assist SM on duty at **RKM** to carry out the resetting operation for the UP direction between **RKM-AGC**. On the advise of SM on duty at **RKM** about the resetting of axle counters for UP Main line, Main SM on duty at **AGC** will insert key and press the co-operative button for the UP direction. A Buzzer will ring during the resetting operation; the co-operative button shall be released on advice of SM **RKM**.

NOTE:

1. On the complaint from the Loco pilot of the train about failure of an Automatic Signal on UP line, the SM at **AGC** shall advise SM **RKM** station.
2. Resetting keys are provided with locks and keys shall be kept by SM on duty in his personal custody.

14.2. **FAILURE & RESETTING OF DIGITAL AXLE COUNTERS(MSDAC) IN AUTOMATIC SECTION IN BETWEEN AGC-BHA SECTIONS IN UP & DN DIRECTIONS :-**

(i) The Axle counters indications AGC-BHA section are provided in VDU **(AUTO BLOCK)** in the SMs office. The local control **VDU(AUTO BLOCK)** panel depicts the occupancy / vacancy of Axle Counter and Signal aspects AGC-BHA Automatic Block Sections under control of the station.
The particular track section/sections 'OCCUPIED' 'RED background zone around the track section will appear whenever there is any train on the particular track section OR both axle counters (MSDACs) failure of any sub section. If there is a failure of 1st MSDAC axle counter sub section the signals will be controlled by 2nd MSDAC axle counters automatically and the trains will run on proper signals. Similarly, if there is a failure of 2nd MSDAC axle counter sub section, the signals will be controlled by 1st MSDAC axle counter automatically and trains will run on proper signals hence no failure memo will be issued.
In any of the two cases above, the failed axle counters will be Auto resetted by other axle counter & it will come in preparatory reset mode and will be clear after passing of next train.
If after the automatic resetting, Axle counter is not clear, on duty SM will give message to the S&T staff for its failure. However, if both the axle counters have failed, this will cause concerned automatic/semiautomatic signal to exhibit 'ON' aspect and trains will run as per GR 9.02 and 9.02/1 of G&SR.

Resetting of Axle counter in Automatic Section (AGC-BHA);

(i) In dual detection tracks if one axle counter (DUAL MSDAC) only fails and the other axle counter corresponding is showing track clear. The system applies axle counter reset to Preparatory State on its own and earlier failed axle counter will RESET without the intervention of the SM. After passage of next train, the preparatory axle counter may get clear.

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(ii) In case both Axle Counter (DUAL MSDAC) , pertaining to same section have failed 'OCCUPIED' 'RED background zone around the track section will appear on VDU, Auto resetting is not possible to reset the axle counter.

In such case Resetting for UP direction in Automatic Section by the SM on duty at AGC shall not be done unless it has been ensured by him that:-

a) The UP Main line between AGC-BHA section is clear of any trains.
b) He has confirmed from the on duty SM other end (receiving end) about the complete arrival of the last train at his end, dispatched by SM/AGC in the concern section supported by a private number.
c) SM will then ask SM on duty other end (receiving end) station by sending Request Co-operation through LCP command to assist in resetting the axle counter by giving the Co-operation through LCP by doing this a "RED" indication of request co-operation will appear at other end (receiving end) then by seeing this RED indication other end (receiving end) station will give Co-operation through LCP.
d) A Co-operation ACK indication (Green) will appear on the indication panel (VDU) of SM/ AGC (sending end) station as soon as other end give the Co-operative command by VDU.
e) After Seeing Co-operation ACK indication appeared on the VDU, on duty SM/ AGC will give RESET command through VDU Panel for failed track section.
f) If system accepted RESET, "Preparatory Reset" (Yellow) indication will appear on the VDU & Co-operation ACK indication (Green) at this end &"RED" indication of request co-operation will be disappear at other end.

Following procedure for manual reset of Axle Counter section from LCP is adopted (Preparatory reset with acknowledgement).

(i) The SM right clicks on the common Axle counter Co-operation button of concern section to open sub Menu. The SM Left click on Co-operation request on the sub-menu and transmits the same to other end station. After this a Axle counter RESET request will appear at other end by a RED indication. By seeing RESET request RED indication on LCP other end will accept request by giving co-Operation through LCP , When SM/ AGC receives the acknowledgement from the other end ,the Green indication of AXLE COUNTER RESET ACK will appear on ***SM/ AGC VDU,*** Then ***SM/ AGC*** will give RESET command by clicking on failed axle counter track section.

(ii) If the Reset is successful, a "Preparatory Reset" (Yellow) indication will appear on the VDU and Co-operation ACK indication (Green) at this end &"RED" indication of request co-operation will be disappear at other end. When the axle counter/counters clears after passage of next train, the RED background disappears and the axle counter section displays grey. If it does not happen, call the S&T maintainer to attend the failure.

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15.0 ROUTINE CHECK UP OF THE POINT MACHINES WITHOUT DISCONNECTION OF POINTS:

Point machine check up is not allowed without DCN.

Point testing is to be done with the written advice to SM.

16.1 MOVEMENT AUTHORISATION REGISTER :

No movement shall be allowed over a point, which is under maintenance/check up by the S.M. without the prior intimation to the S&T official supervising the maintenance/check up of the points. Whenever a movement is required to be made over such points, information of the same shall be given by the S.M. on duty to the S&T official supervising the work by making entries in columns 1 to 7 of a Movement Authorization Register maintained for this purpose at the station.

The ESM on duty shall then get the points set in the required position and fill in columns 8 and 9 of the register. The VDU panel S.M. on duty on completion of columns 8 & 9 by the ESM on duty and on appearance of steady light indication of the point in the desired position shall then make the movement over the said point. Immediately after the movement over the said point, the VDU panel S.M. shall fill in columns 10 to 11 of the register and the ESM on duty shall then fill in columns 12 of the register and then re-start the point work. Special remarks, if any shall be made in the columns No. 13 by the SM or ESM. if points are required again for movement, the above procedure shall be repeated again. The columns of the special register for this purpose shall be as under:-

S. No	Date	Point No.	Time at which point is required	Description of movement	Required position of the points	Private number of SM on duty	Time Point set by S&T staff
1	2	3	4	5	6	7	8
Signature of ESM on duty		Time movement over & point handed over again for maintenance		Private number of SM on duty	Signature of SM on duty	Signature of ESM on duty	Remarks, if any
9		10		11	12	13	14

S&T official at site shall however, ensure before starting the work that a telephone link is established between site and the SM.

16.2 ROUTINE MAINTENANCE OF TRACK CIRCUITS:

The ESM on duty shall advise the S.M. through written memo about the track circuit in which the work is to be taken in hand. The S.M. shall after checking the position of the trains allow time in between trains during which the ESM concerned shall arrange to check/replace the joints of the track concerned.

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While executing this work the ESM shall exhibit banner flags at 50 meters on either side of the site of work and protect the site of work.

Normally the ESM shall ensure completion of the work in the time asked for and allowed. The SM in the event of non-completion of the work by the ESM must ensure that the signals are not cleared and the train is first checked outside the home signal and then allowed in, if the train is to pass on the affected track circuit. In addition, he shall inform signal staff that the train is expected to pass over the said work.

17.0 POWER SUPPLY EQUIPMENT AND POWER SUPPLY FAILURES:-

Two sources of Power supply Main (Supply from UPPCL) and Up and Down catenaries through auxiliary transformers (UP and DN AT) are available for feeding the signaling circuits at this station. The primary source is Local Power from UPPCL and a secondary source is UP and DN AT .Both these supplies have been made available in the Automatic Changeover Panel (MACLS Panel) provided in the SM's room having an Auto/Manual Changeover Switch. Pilot lamps have been provided in the MACLS Panel to indicate the availability of supplies in the MACLS Panel.

Whenever power from UPPCL fails the Auto Change over switches Automatically to AT supply. In case the Auto Change over switch fails to operate after one source of power supply fails, the Station Master on duty shall operate the Manual Change over switch to the position of other source of power supply mentioned on the panel. Whenever the supply from UPPCL fails for longer duration, the switch should be put to other position forensuring power supply and Electrical Controller shall be informed through the Section Controller Beside this, one SM Panel for IPS is also provided in the SM's room for monitoring the status of Integrated Power Supply (IPS) system for signaling. The audiovisual indications available on the SM panel are for any failure in IPS and monitoring the status of batteries to generate the audio-visual alarm for the following conditions;

Voltage Monitoring bar graph:-This shows voltage level in steps of 2V from 102 V and above & consists of LEDs. Out of 10 LEDs 6 are of green colour, 2 of amber and 2 of red colour. Green indicate safe operation zone, amber indicates alert zone.

Call S&T Staff:-This LED glows when any of the modules, converters (DC-DC), CVT etc fails, SM on duty should bring it to the notice of S&T staff when this LED glows.

Start Generator: - The indication glows when battery voltage reaches approximately 109 V. audio alarm is also provided for this condition. Once the generator is started the indication goes 'off'. Audio alarm can be acknowledged by pressing reset push button.

Emergency Start Generator:- This indication glows when battery voltage reaches to approx 107V. This is a second indication alarm to SM to start the generator. The audio alarm can be reset using reset push button. .

System shut down:- This indication glows when battery is discharged to 105V approx. The audio alarm will continue to operate until the generator is started.

Call S&T staff: - This LED glows when any of the modules, converters (DC-DC), CVT etc fails, SM on duty should bring it to the notice of S&T staff when this LED glows.

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Operation of DG Set:-

If start the DG set indication appears on the IPS monitoring panel the SM on duty should start the DG set provided for the purpose by pressing the Start Push Button provided in the SM room & rotate the Change over Switch to the DG position. As soon as the local power supply from UPPCL resumes the SM on duty should put off the DG set by pressing the stop button provided in the SM room. In case the failure of local power supply prolongs for more than 04 Hours then the SM on duty should put off the 1st DG set & start the other DG set by pressing the respective push buttons along with changing of position of change over switch to make selection between two DG sets. The SM on duty should also ensure the entry of the start & stop of the DG sets in the logbook provided for this purpose.

If both the supplies fail for long time, the SM on duty will inform ESM of the station about the fact and advise him to attend the failure. He will also inform Signal Control through Section Controller about the failure and T/369(3b) will be issued for the signals as per SR 3.68 & 3.69 of the GR & SR book.

18(A) **General Instructions**:

In case of Non-lamp on the board remaining permanently extinguished showing non-availability of the normal supply. SM on duty will arrange to inform the SSE/JE (Electrical) & section through XR /control message for attending the equipment with copies to JE (E) & SSE (S) of the section.

i). Instructions to start and stop the Diesel Generator.

ii). If the power supply is uninterrupted for more than days a test of the engine should be carried out on load and if its fails to runs, the matter should be reported to JE/SSE/Signal of the Section immediately by XR Telecom.

iii. The Station Master on duty should check up daily the diesel oil level in the tank and lubricating oil level in the diesel engine by means of the indicator (Dip Stick) provided for the purpose.

iv). If diesel oil or mobile oil level falls bellow the mark given on the dip stick he will get the required oil filled in by his staff up to required level.

He will also inform the SSE (Signal) of the section for the supply of diesel and mobile oil when required.

18(B) i). If the Signals get extinguished due to any reason whatsoever after the permission has been granted and the train has left the Station in rear. The SM shall depute a competent Railway Servant with necessary hand signal/ detonators as required to warn the Drivers of approaching trains about the location of unlit stop signals and arrange to pilot the train as per the extent rules.

ii). When the commercial supply is restored, the Switch should be changed over to Commercial side. The Generator should be stopped.

iii. Diesel Oil will be filled in the Generators and suitable entry made in the log book by S.M. The S.M. on duty will also maintain record of the use of 'Diesel Generator in the log book. Details of Service/over hauling repairs etc. should also be entered in the log book by S&T Staff in the remarks column.

The S.M. on duty will maintain the record of the Power Supply failure / restoration in the log book.

Sr. No.	Date	Time Commercial Power Failed	Time Commercial Power Restored	Duration of Commercial Power Failure	Time Generator Started.
1	2	3	4	5	6

Time Generator Stopped	Duration of Generator Run	Quantity Filled		Signature of Station Manager	Remarks
		Diesel	M.Oil		

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7	8	9	10	11	12

iv. Diesel Generator sets may also be operated in case of Low Voltage of commercial Supply.

v. The Yard Stick for the consumption of diesel is as under.

a). The average consumption is 2.5 Litres per hour provided the Generator is in good condition.

b). Capacity of the Tank of D.G. Set = 100 Litres and availability of fuel is indicated in % on the display provided in the DG set

c). In case of Failure of D.G. Set, S.M. will inform the signal Staff.

19.0 Failure of Panel Indication:

In case panel/VDU goes blank, SM on duty should check whether power supply is available or not. The same can be checked on the indication provided on the power supply change over board provided in the SMs office.

In case of power supply is not available, he will operate the diesel generator provided at the station and will change over the switch to "Generator" position on the change over board and normal working on the panel will continue.

In case of local power supply and generator supply are not available due to any defect; no normal operation from the panel shall be done. Points will be clamped and movements will be done as per G&SR 3.77 in non-interlocked yard. However for local operation of points, crank handle control key can be extracted for operation of points.

20.0 Defective interlocking:

When the interlocking becomes defective all the relative signals are to be treated as defective and put out of use. Trains shall be passed on the authority T/369-3b supported with hand signal in case of Starter and Home Signals and train to be piloted. Procedure laid down in GR 3.68, 3.69 and 3.70 and their SR's will be followed.

21.0 S&T Register:

The following S&T registers are kept at the station in the custody of Station Master on duty.

a) **Signal Inspection Register:** SM on duty will record the signaling failures in appropriate columns.

b) **Signal History Register**: S&T staff will make entries in the register

c)

22.0 TELECOMMUNICATIONS:-

1. The Telephone connection is provided between S.M.Central Cabin and

(a) DY.SS, CYM, Agra Cantt.
(b) LX.NO. 493,and 494 (AGC-BHA Section)
(c) SM Raja ki Mandi, SM Idgah, SM Bhandai and SM New Junction Cabin.
(d) Control office at AGRA CANTT on unified Control system under charge of North Central Railway.
(e) Crank Handle Locations.

23. HEADQUARTERS OF THE OFFICIAL TO BE ADVISED

In case of failure of S&T gears advice must be sent in writing and by wire to the following officials.

1. Mechanical signal maintainer : AGRA
2. Electrical signal maintainer : AGRA
3. Junior Engineer (Signal -Section) : AGRA
4. SSE(Signal) : AGRA
5. Traffic Inspector : AGRA
6. Chief Controller : AGRA

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7. Asstt. Divl. Signal and Tele. Engr. : AGRA
8. Sr.Divl. Safety officer : AGRA
9. Sr. Divl. Operation Manganger : AGRA
10. Divl. Signal & Telecom. Engr. : AGRA
11. Sr. Divl. Signal and Tele. Engr. : AGRA

In case of failure of power supply advice must be sent in writing and by wire to the following in addition to the officials mentioned as above.

1. Electric Wireman (Maintainer) : AGRA
2. Sr. Electric Foreman (G) : AGRA
3. Electric Foreman TRD : AGRA
4. Sr. Divl. Elect. Engr./G : AGRA
5. D.E.E. (TRD) : AGRA
6. D.E.E. (G) : AGRA

24.0 FIRE ALARM SYSTEM:-

Note: - A Fire Alarm System is provided in Relay Room, IPS Room & Equipment' s Room and a monitor unit for the same is provided in the Station Master office.

When any incidence of fire takes places inside the rooms, an audible and visible indication will appear in the Station Master office on monitor unit. On duty station master should advise immediately to S&T Staff and S&T Control AGRA to attend whenever he notice audible and visible indication from monitor unit and after informing he can press the switch provided on monitor unit to acknowledge and stop the buzzer.

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Annexure - 'A' to Appendix - B

ROUTE TABLE FOR MAIN SIGNALS							
SR. No.	SIG. NO. & P.B/ Mouse click.	MOVE TO	ROUTE	IN THE RUN POINT	OVERLAP POINTS	ISOLATION POINTS	REMARK
DOWN RECEPTION & DESPATCH SIGNALS							
1	2	S4	UV	–	–	-	I.LX-494 CLOSED & LOCKRD. II-AUTO MODE FACILITY PROVIDED
2	4	S34	R	206a/bN,207a/bN, 210a/bR,212a/bR, 213a/bN,214R, 215R	263R, 265N.	208N,262N, (231N OR 225R, 224R)	-
3	4	S36	Q	206a/bN,207a/bN, 210a/bR,212a/bR, 213a/bN,214R, 215N	264N, 265R.	208N,262N, (231NOR 225R, 224R)	-
4	4	S38	P	206a/bN,207a/bN, 210a/bR,212a/bR, 213a/bN,214N	264R, 265R	208N,262N, (231N OR 255R, 224R)	-
5	4	S40	N	206a/bN,207a/bN, 210a/bR,212a/bN, 217N,218N, 221R	267R	(208N OR 209R) ,(231N OR 255R, 224R)	-
6	4	S42	M	206a/bN,207a/bN, 210a/bR,212a/bN, 217N,218N, 221N.	267N	(208N OR 209R) ,(231N OR 255R, 224R)	-
7	4	S44	L	206a/bN,207a/bN, 210a/bR,212a/bN, 217N,218R, 219R.	271N, 272N	(208N OR 209R) ,(231N OR 255R, 224R)	-
8	4	S46	K	206a/bN,207a/bN, 210a/bR,212a/bN, 217N,218R, 219N,220R	271R, 272N.	(208N OR 209R) ,(231N OR 255R, 224R)	-
9	4	S48	J	206a/bN,207a/bN, 210a/bR,212a/bN, 217N,218R,219N, 220N	272R.	(208N OR 209R) ,(231N OR 255R, 224R)	-

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10	4	S50	H	206a/bN,207a/bN, 210a/bR,212a/bN, 217R,225a/bN, 230a/bR	273R, 269a/bN	(208N OR 209R). 231a/bN	-
11	4	S68	G	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bR,230a/bN, 231a/bN,233R.	–	217N,(240N OR 227R)	-
12	4	S72	F	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bR,230a/bN, 231a/bN,233N, 232a/bN,236a/bN.	285a/bR , 284a/bN	217N, (240N OR 227R)	-
13	4	S72	F1	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bN,226a/bN, 227a/bN,235a/bR, 236a/bR,	285a/bR , 284a/bN	237N, 232a/bN, 240a/bN,	-
14	4	S74	E	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bN,226a/bN, 227a/bN,235a/bR, 236a/bN,237R	283R, 285a/bN .	240a/bN, 284a/bN,	-
15	4	S76	D	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bN,226a/bN, 227a/bN,235a/bN, 241a/bR,240a/bN,	–	-	-
16	4	S78	C	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bN,226a/bN, 227a/bN,235a/bN, 241a/bN.	292a/bN , 293a/bN , 289a/bN .	240a/bN,	-
17	4	S60	A	206a/bN,207a/bN, 210a/bN,224a/bN, 225a/bN,226a/bR, 227a/bN,228a/bR, 245a/bN,246a/bN, 247a/bN.	258a/bN OR S60 PRESE T.	244N, 203a/bN.	-
					256a/bN, 255a/bN, 258a/b R	257 N	
					255a/bR, 293a/b N		
					255a/bR, 293a/b R		

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18	34	S90	U	263R,265N, 268a/bN,274N, 279a/bR,286N, 287N.	(290a/bN,288R, 298a/bN 299a/bN , OR S90 Preset)	262N, 270N (284N OR 289R)	-
19	36	S90	U	264N,265R, 268a/bN,274N, 279a/bR,286N, 287N,	290a/bN 288R, 298a/bN 299a/bN OR S90 PRESET	262N, 270N, (284N OR 289R)	-
20	38	S90	U	264R,265R, 268a/bN,274N, 279a/bR,286N, 287N,	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	262N, 270N, (284N OR 289R)	-
21	40	S90	U	267R,269a/bN, 274R,279a/bR, 286N, 287N,	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	262N, 268a/bN, 270N, (284N OR 289R)	-
22	40	S92	T	267R, 269a/bR, 275a/bR, 280a/bR, 289a/bR.	294a/bN 290a/bN 295a/bN 297N, 296a/bN OR S92 Preset	274N, 284a/bN, 300N, 277N,	-
23	42	S90	U	267N, 269a/bN, 274R, 279a/bR, 286N, 287N.	290a/bN 288R, 298a/bN 299a/bN , R S90 Preset	262N, 268a/bN, 270N, (284N OR 289R)	-
24	42	S92	T	267N, 269a/bR, 275a/bR, 280a/bR, 289a/bR.	294a/bN 290a/bN 295a/bN 297N, 296a/bN OR S92 Preset	274N, 284a/bN, 277N, 300N.	-

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25	44	90	U	271N, 272N, 273N, 269a/bN, 275a/bR, 280a/bN, 286R, 287N	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	277N, 279a/bN, (284 OR 289R)	-
26	44	S92	T	271N, 272N, 273N, 269a/bN, 275a/bR, 280a/bR, 289a/bR	290a/bN 294a/bN 295a/bN 296a/bN 297N. OR S92 Preset	277N, 284a/bN, 300N.	-
27	46	S90	U	271R, 272N, 273N, 269a/bN, 275a/bR, 280a/bN, 286R, 287N	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	277N, 279a/bN, (284N OR 289R)	-
28	46	S92	T	271R, 272N, 273N, 269a/bN, 275a/bR, 280a/bR, 289a/bR.	290a/bN 294a/bN 295a/bN 296a/bN 297N. OR S92 Preset	277N, 284a/bN, 300N.	-
29	48	S90	U	272R, 273N, 269a/bN, 275a/bR, 280a/bN, 286R, 287N.	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	277N, 279a/bN, (284N OR 289R)	-
30	48	S92	T	272R, 273N, 269a/bN, 275a/bR, 280a/bR, 289a/bR.	290a/bN 294a/bN 295a/bN 296a/bN 297N. OR S92 Preset	277N, 284a/bN, 300N.	-
31	50	S90	U	273R, 269a/bN, 275a/bR, 280a/bN, 286R, 287N.	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	277N, 279a/bN, (284N OR 289R)	-

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32	50	92	T	273R, 269a/bN, 275a/bR, 280a/bR, 289a/bR.	290a/bN 294a/bN 295a/bN 296a/bN 297N. OR S92 Preset	277N, 284a/bN, 300N.	-
33	56	S94	BX	257R,258a/bN, 259a/bR,294a/bN, 295a/bR,297R, 299a/bR.	–	253a/bN, 254a/bN, 256a/bN, 288N, 289a/bN, 290a/bN, 298a/bN, 300N.	(i). S99 RECR to be pproved in HR. (ii)Released through OFF aspect of S-94
34	56	S98	DX	257R, 258a/bN, 259a/bR, 294a/bN, 295a/bR, 297N, 296a/bN	–	253a/bN, 254a/bN, 256a/bN, 289a/bN, 290a/bN, 300N,	S99 RECR to be pproved in HR.
35	56	S96	CX	257R,258a/bN, 259a/bN,260a/bN.	–	253a/bN, 254a/bN, 256a/bN.	-
36	60	S94	BX	255a/bR,293a/bN, 259a/bN,294a/bN, 295a/bR, 297R, 299a/bR	–	289a/bN, 290a/bN, 298a/bN, 288N, 300N.	(i). S99 RECR to be pproved in HR. (ii)Released through OFF aspect of S-94
37	60	S98	DX	255a/bR,293a/bN, 259a/bN,294a/bN, 295a/bR,297N, 296a/bN.	–	289a/bN, 290a/bN, 300N.	(i). S99 RECR to be pproved in HR. (ii)Released through OFF aspect of S-98
38	60	S96	CX	255a/bN,258a/bR, 256a/bN,259a/bN, 260a/bN	–	257N.	Released through OFF aspect of S-96
39	68	S90	U	277R, 275a/bN, 280a/bN, 286R, 287N.	288R, 290a/bN 289a/bN 299a/bN OR S90 Preset	279a/bN, (284N OR 289R)	-

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40	68	S92	T	277R, 275a/bN, 280a/bR, 289a/bR	290a/bN 294a/bN 295a/bN 296a/bN 297N, OR S92 Preset	284a/bN, 287N 300N,	-
41	72	S90	U	280a/bN, 285a/bR, 284a/bN, 289a/bN, 287N.	290a/bN 288R,, 298a/bN 299a/bN OR S90 Preset	275a/bN, 279a/bN, 283N.	-
42	72	92	T	285a/bR, 284a/bN, 289a/bR,	290a/bN 294a/bN 295a/bN 296a/bN 297N, OR S92 Preset	283N, 287N 300N,	CH21,23,24, 25,28.
43	74	S90	U	283R, 285a/bN, 280a/bN, 289a/bN, 287R.	290a/bN 288R, 298a/bN 299a/bN OR S90 Preset	275a/bN, 279a/bN, 284a/bN,	-
44	74	S92	T	283R, 285a/bN, 280a/bN, 289a/bR,	290a/bN 294a/bN 295a/bN 296a/bN 297N, OR S92 Preset	284a/bN, 300N,	-
45	76	S92	T	292a/bR, 293a/bN, 289a/bN.	290a/bN 294a/bN 295a/bN 296a/bN 297N, OR S92 Preset	300N.	-
46	78	S92	T	292a/bN, 293a/bN, 289a/bN	294a/bN 290a/bN 295a/bN 297N, 296a/bN OR S92 Preset	300N	AUTO MODE FACILITY PROVIDED

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47	90	S94	BX	290a/bN, 288R, 298a/bN, 299a/bN.	–	(262N OR 270R),(268N OR 270R), (284N OR 289R)	Released through OFF aspect of S-94
48	90	S98	DX	290a/bR, 295a/bN, 297N, 296a/bN	–	(262N OR 270R),(268N OR 270R) (284N OR 289R),288N,300 N,	Released through OFF aspect of S-98
49	92	S94	BX	294a/bN, 290a/bN, 295a/bN, 297aR, 299a/bR	–	288N, 298a/bN, 300N.	Released through OFF aspect of S-94
50	92	S98	DX	294a/bN, 290a/bN, 295a/bN, 297N, 296a/bN	–	300N, 299a/bN	(i) AUTO MODE FACILITY PROVIDED . (ii)Released through OFF aspect of S-98
51	92	S96	CX	294a/bR, 295a/bN, 260a/bR	–	256a/bN, 257N, 300N.	(i)Released through OFF aspect of S-96. (ii) S-99 ECPR to be proved in HR
52	94	S9 New Junc. Panel	BZ	–	–	298a/bN	(i) *Slotted by New Jn. Panel*
53	96	S15 (IDH)	CZ	–	–	256N	(i) *Slotted by Idgah*
54	98	A1345 05	DZ	–	–	–	(i) AUTO MODE FACILITY PROVIDED
UP RECEPTION & DESPATCH SIGNALS							
1	1			spare			
2	3	A515	UM	–	–	-	(i) AUTO MODE FACILITY PROVIDED . (ii)LX-494 closed & locked
3	5	S3	UX	207a/bN, 203a/bN, 201a/bN.	–	–	(i) AUTO MODE FACILITY PROVIDED . (ii)LX-494 closed & locked
4	7	S3	UX	203a/bN, 201a/bR	–	202N	(i)LX-494 closed & locked

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5	21	7	GL	246a/bR,245a/bN, 228a/bN,244R, 243a/bN	203a/bN, 201a/bN, 202N OR S7 Preset	247a/bN	(i)243T to be proved in Berthing Track
6	21	S5	BA	246a/bN,228a/bN, 227a/bN,226a/bN, 224a/bN	201a/bN, 203a/bN, 207a/bN.	–	(i)AUTO MODE FACILITY PROVIDED.
7	23	S7	GL	247a/bN,246a/bN, 245a/bN,228a/bN, 244R,243a/bN	203a/bN, 201a/bN, 202N OR S7 Preset	-	i)243T to be proved in Berthing Track
8	23	S5	BA	247a/bN,246a/bN, 245a/bN,228a/bR, 227a/bN,226a/bN, 224a/bN.	201a/bN, 203a/bN, 207a/bN,	244N.	-
9	31	S5	BA	241a/bR,240a/bN, 235a/bN,227a/bR, 226a/bN,224a/bN.	207a/bN, 203a/bN, 201a/bN.	228a/bN, 206a/bN.	-
10	35	S5	BA	237R,236a/bN, 235a/bR,227a/bR, 226a/bN,224a/bN.	207a/bN, 203a/bN, 201a/bN.	228a/bN, 206a/bN. 240a/bN,	-
11	37	S5	BA	236a/bR,235a/bR, 227a/bR,226a/bN, 224a/bN.	207a/bN, 203a/bN, 201a/bN.	232a/bN, 237N. 228a/bN, 206a/bN, 240a/bN,	-
12	37	S41	RT	236a/bN,232a/bN.	233N.	–	-
13	41	S5	BA	233N,231a/bN, 230a/bN,225a/bR, 224a/bR.	207a/bN, 203a/bN, 201a/bN.	206a/bN, 217N, 240a/bN, 228a/bN,	-

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14	43	S5	BA	233R,231a/bN, 230a/bN,225a/bR, 224a/bR.	207a/bN, 203a/bN, 201a/bN.	228a/bN, 240a/bN, 217N, 206a/bN,	-
15	51	S5	BA	230a/bR, 225a/bR, 224a/bR.	207a/bN, 203a/bN, 201a/bN.	228a/bN, 231a/b N 240a/bN, 217N,	-
16	53	S3	UX	220N,219N, 218R,217N, 212a/bN,210a/bR, 207a/bR,203a/bN, 201a/bN.	–	206a/bN, (208N OR 209R)	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
17	55	S3	UX	220R,219N, 218R,217N, 212a/bN.210a/bR, 207a/bR,203a/bN, 201a/bN.	–	206a/bN, (208N OR 209R)	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
18	57	S3	UX	219R,218R, 217N,212a/bN. 210a/bR,207a/bR, 203a/bN,201a/bN.	–	206a/bN, (208N OR 209R)	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
19	59	S3	UX	221N,218N,217N, 210a/bR.207a/bR, 203a/bN,201a/bN, 212a/bN.	–	206a/bN, (208N OR 209R)	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
20	61	S3	UX	221R,218N, 217N,212a/bN, 210a/bR.207a/bR, 203a/bN,201a/bN,	–	206a/bN, (208N OR 209R)	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
21	63	S3	UX	214N,213a/bN, 212a/bR,210a/bR. 207a/bR,203a/bN, 201a/bN,	–	206a/bN, 208N,	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
22	65	S3	UX	215N,214R, 213a/bN,212a/bR, 210a/bR.207a/bR, 203a/bN,201a/bN,	–	206a/bN, 208N,	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED
23	67	S3	UX	215R,214R, 213a/bN,212a/bR, 210a/bR.207a/bR, 203a/bN,201a/bN,	–	206a/bN, 208N,	i. S4 RECR TO BE PROVED IN HR. ii. LX-494 CLOSED & LOCKED

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24	95	BAY PF LINE	BP	299a/bR,297R, 295a/bR,294a/bN, 259a/bR,258a/bN, 257R,254a/bN, 1GF(1)N.	-	298a/bN, 300N, 288N, 256a/bN, 289a/bN, 290a/bN, 253a/bN	i. S99 RECR TO BE PROVED IN HR. ii. 254T TO BE PROVED IN BEARTHING PORTION
25	95	S23	A	299a/bR,297R, 295a/bR,294a/bN, 259a/bN,293a/bN, 255a/bR.	247a/bN, 246a/bN	298a/bN, 300N, 288N, 289a/bN, 290a/bN, 244N, 245a/bN.	i. S99 RECR TO BE PROVED IN HR.
26	95	S21	B	299a/bR,297R, 295a/bR,294a/bN, 259a/bN,293a/bN, 255a/bN.	246a/bN. 246a/bR, 245a/bN.	298a/bN, 300N, 288N, 289a/bN, 290a/bN. (247NW246 R)	i. S99 RECR TO BE PROVED IN HR.
27	95	S31	D	299a/bR,297R, 295a/bN,290a/bN, 294a/bN,289a/bN, 293a/bN, 292a/bR.	241a/bR, 240a/bN.	298a/bN, 300N, 288N.	-
28	95	S35	E	299a/bR,298a/bN, 288R,290a/bN, 287R,289a/bN, 280a/bN,285a/bN, 283R.	237R, 236a/bN.	284a/bN, 275a/bN, 279a/bN.	-
29	95	S37	F	299a/bN,298a/bN, 288R,290a/bN, 287R,289a/bN, 280a/bN,285a/bR, 284a/bN	236a/bN, 232a/bN	275a/bN, 279a/bN, 283N,	-

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30	95	S37	F1	299a/bN,298a/bN, 288R,290a/bN, 287R,289a/bN, 280a/bN,285a/bR, 284a/bN.	236a/bR.	275a/bN, 279a/bN, 283N, 232a/bN.	-
31	95	S43	G	299a/bN,298a/bN, 288R,290a/bN, 287N,286R, 280a/bN,275a/bN, 277R.	233R	279a/bN, (284a/bN, OR 289R),	-
32	95	S51	H	299a/bN,298a/bN, 288R,290a/bN, 287N,286R, 280a/bN,275a/bR, 269a/bN,273R.	–	277N, 279a/bN, (284a/bN OR 289R)	-
33	95	S53	J	299a/bN,298a/bN, 288R,290a/bN, 287N,286R, 280a/bN,275a/bR, 269a/bN,273N,27 2R.	220N, 219N.	277N, 279a/bN, (284a/bN, OR 289R)	-
34	95	S55	K	299a/bN,298a/bN, 288R,290a/bN, 287N,286R, 280a/bN,275a/bR, 269a/bN,273N, 272N,271R.	220R, 219N.	277N, 279a/bN, (284a/bN, OR 289R)	-
35	95	S57	L	299a/bN,298a/bN, 288R,290a/bN, 287N,286R, 280a/bN,275a/bR, 269a/bN,273N, 272N,271N.	219R.	277N, 279a/bN, (284a/bN, OR 289R)	-
36	95	S59	M	299a/bN,298a/bN, 288R,290a/bN, 287N,286N, 279a/bR,274R, 269a/bN,267N,	221N.	262N, 268a/bN, 270N, (284a/bN, OR 289R)	-
37	95	S61	N	299a/bN,298a/bN, 288R,290a/bN, 287N,286N, 279a/bR,274R, 269a/bN,267R,	221R.	262N, 268a/bN, 270N, (284a/bN, OR 289R)	-

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Dy. CSTE/PU/TDL

38	95	S63	P	299a/bN,298a/bN, 288R,290a/bN, 287N,286N, 279a/bR,274N, 268a/bN,265R, 264R.	214N.	262N, 270N, (284a/bN, OR 289R)	-
39	95	S65	Q	299a/bN,298a/bN, 288R,290a/bN, 287N,286N, 279a/bR,274N, 268a/bN,265R, 264N	214R, 215N.	262N, 270N, (284a/bN, OR 289R)	-
40	95	S67	R	299a/bN,298a/bN, 288R,290a/bN, 287N,286N, 279a/bR,274N, 268a/bN,265N, 263R.	215R, 214R.	262N, 270N, (284a/bN, OR 289R)	-
41	97	BAY PF LINE	BP	260a/bN,259a/bN, 258a/bN,257R, 254a/bN,1GF(1)N	-	253a/bN, 256a/bN	254T TO BE PROVED IN BEARTHING PORTION
42	97	S23	A	260a/bN,259a/bN, 258a/bR,256a/bN, 255a/bN	247a/bN, 246a/bN	257N, 244N, 245a/bN	-
43	97	S21	B	260a/bR,295a/bN, 294a/bN,259a/bN, 293a/bN,255a/bN.	246a/bN OR 246 a/bN, 245 a/bN	257N, 256a/bN,	i-S-99 ECPR to be proved in HR
44	97	S31	D	260a/bR,295a/bN, 294a/bR,289a/bN, 293a/bN,292a/bR.	241a/bR, 240a/bN,	257N, 256a/bN, (300N OR 290R).	i-S-99 ECPR to be proved in HR
45	97	S35	E	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bN,285a/bN, 283R.	237R, 236a/bN.	256a/bN, 257N, 284a/bN, (300N OR 290a/bR).	i-S-99 ECPR to be proved in HR
46	97	S37	F	260a/bR,295a/bN, 294a/bR, 289a/bR, 280a/bN, 285a/bR, 284a/bN.	236a/bN, 232a/bN.	256a/bN, 257N, 283N, (300N OR 290a/bR).	i-S-99 ECPR to be proved in HR

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Sr.DSTE/Co./AGC

(Kush Gupta)
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Dy. CSTE/CO/TDL

47	97	S37	F1	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bN,285a/bR, 284a/bN.	236a/bR	232a/bN, 256a/bN, 257N, 283N, (300N OR 290a/bR)	i-S-99 ECPR to be proved in HR
48	97	S43	G	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bN, 277R	233R.	256a/bN, 257N, 284a/bN, (300N OR 290a/bR)	i-S-99 ECPR to be proved in HR
49	97	S51	H	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bR, 269a/bN,273R.	–	256a/bN, 257N, 277N 284a/bN, (300N OR 290a/bR)	i-S-99 ECPR to be proved in HR
50	97	S53	J	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bR, 269a/bN,273N, 272R.	220N, 219N.	256a/bN, 257N, 277N, 284a/bN, (300N OR 290a/bR)	i-S-99 ECPR to be proved in HR
51	97	S55	K	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bR, 269a/bN,273N, 272N,271R.	220R, 219N.	256a/bN, 257N, 277N, 284a/bN, (300N OR 290a/bR)	i-S-99 ECPR to be proved in HR
52	97	S57	L	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bR, 269a/bN,275aR, 273N,272N, 271N.	219R.	256a/bN, 257N, 277N, 284a/bN, (300N OR 290R)	i-S-99 ECPR to be proved in HR
53	97	S59	M	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bR, 269a/bR,267N.	221N	256a/bN, 257N, 274N, 277N, 284a/bN, (300N OR 290R)	i-S-99 ECPR to be proved in HR

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(Kush Gupta)
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54	97	S61	N	260a/bR,295a/bN, 294a/bR,289a/bR, 280a/bR,275a/bR, 269a/bR,267R.	221R	256a/bN, 257N, 274N, 277N, 284a/bN, (300N OR 290R)	i-S-99 ECPR to be proved in HR
55	99	BAY PF LINE	BP	296a/bN,260a/bN, 295a/bN,294a/bN, 259a/bR,258a/bN, 257R,254a/bN. 1GF(1)N.	-	256a/bN, 253a/bN	254T TO BE PROVED IN BEARTHING PORTION
56	99	S23	A	296a/bN,260a/bN, 295a/bN,294a/bN, 259a/bN,293a/bN, 255a/bR	247a/bN, 246a/bN	244N, 245a/bN	-
57	99	S21	B	296a/bN,260a/bN, 295a/bN,294a/bN, 259a/bN,293a/bN, 255a/bN	246a/bN 246R, 245N	– 247N W 246R	i. Auto mode facility provided
58	99	S31	D	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bN,293a/bN, 292a/bR	241a/bR, 240a/bN,	259a/bN, (300N OR 290R)	-
59	99	S35	E	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bN, 285a/bN,283R.	237R, 236a/bN.	259a/bN, 284a/bN, (300N OR 290R)	-
60	99	S37	F	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,285a/bR, 284a/bN,280a/bN	236a/bN, 232a/bN	259a/bN, 283N, (300N OR 290R)	-
61	99	S37	F1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,285a/bR, 284a/bN,280a/bN.	236a/bR	232a/bN, 259a/bN, 283N, (300N OR 290R).	-
62	99	S43	G	296a/bR,297N, 295a/bN,290a/bR, 287N,286R, 280a/bN, 275a/bN, 277R.	233R.	300N, 279a/bN, (284N OR 289R,294R , 260R)	-

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Dy. CSTE/C/TDL

63	99	S43	G1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bN,277R.	233R.	259a/bN, 284a/bN, (300N OR 290R).	-
64	99	S51	H	296a/bR,297N, 295a/bN,290a/bR, 287N,286R, 280a/bN,275a/bR, 269a/bN,273R.	–	277N, 279a/bN, 300N, (284N OR 289R,294R , 260R).	-
65	99	S51	H1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bR,269a/bN, 273R.	-	259a/bN, 284a/bN, 277N, (300N OR 290R)	-
66	99	S53	J	296a/bR,297N, 295a/bN,290a/bR, 287N,286R, 280a/bN,275a/bR, 269a/bN,273N, 272R.	220N, 219N.	277N, 279a/bN, 300N, (284N OR 289R,294R , 260R).	-
67	99	S53	J1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bR,269a/bN, 273N,272R.	220N, 219N.	259a/bN, 284a/bN, 277N, (300N OR 290R)	-
68	99	S55	K	296a/bR,297N, 295a/bN,290a/bR, 287N,286R, 280a/bN,275a/bR, 269a/bN,273N, 272N,271R.	220R, 219N.	277N, 279a/bN, 300N, (284N OR 289R,294R ,260R).	-
69	99	S55	K1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bR,269a/bN, 273N,272N,271R.	220N, 219N.	259a/bN, 284a/bN, 277N, (300N OR 290R)	-

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(Kush Gupta)
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Dy. CSTE/C.TC/TDL

70	99	S57	L	296a/bR,297N, 295a/bN,290a/bR, 287N,286R, 280a/bN,275a/bR, 269a/bN,273N, 272N,271N.	219R,	277N, 279a/bN, 300N, (284N OR 289R,294R , 260R).	-
71	99	S57	L1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bR,269a/bN, 273N,272N, 271N.	219R.	259a/bN, 284a/bN, 277N, (300N OR 290R)	-
72	99	S59	M	296a/bR,297N, 295a/bN,290a/bR, 287N,286N, 279a/bR,274R, 269a/bN,267N,	221N	262N, 268a/bN, 270N, 300N, (284N OR 289R,294R , 260R).	-
73	99	S59	M1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bR,269a/bR, 267N,	221N	259a/bN, 284a/bN, 277N, (300N OR 290R), 274N.	-
74	99	S61	N	296a/bR,297N, 295a/bN,290a/bR, 287N,286N, 279a/bR,274R, 269a/bN,267R,	221R	262N, 268a/bN, 270N, 300N, (284N OR 289R,294R ,260R).	-
75	99	S61	N1	296a/bN,260a/bN, 295a/bN,294a/bR, 289a/bR,280a/bR, 275a/bR,269a/bR, 267R,	221R	259a/bN, 284a/bN, 277N, (300N OR 290R), 274N.	-
76	99	S63	P	296a/bR,297N, 295a/bN,290a/bR, 287N,286N, 279a/bR,274N, 268a/bN,265R, 264R.	214N	262N, 268a/bN, 270N, 300N, (284N OR 289R,294R ,260R).	-

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(Kush Gupta)
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77	99	S65	Q	296a/bR,297N, 295a/bN,290a/bR, 287N,286N, 279a/bR,274N, 268a/bN,265R, 264N.	215N, 214R.	262N, 270N, 300N, (284N OR 289R,294R ,260R),	-
78	99	S67	R	296a/bR,297N, 295a/bN,290a/bR, 287N,286N, 279a/bR,274N, 268a/bN,265N, 263R.	215R, 214R.	262N, 270N, 300N, (284N OR 289R,294R 260R),	-
79	60	S92	T	255a/bR, 293a/bN, 289N,	294a/bN, 290a/bN, 295a/bN, 297a/bN, 298a/bN, OR S92 BX PRESET	300N.	-

ROUTE TABLE FOR SHUNT SIGNALS

Sr. No.	SIG.NO. & PB / MOUSE CLICK	MOVE UP TO	ROUTE	POINTS IN THE RUN	POINTS IN ISOLATION	REMARKS/ CRANK HANDLE
1	102	WASHING PIT	CS	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bR,213a/bR,	206a/bN,208N.	CH1, 3, 4.
2	102	SH134	R	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bR,213a/bN, 214R,215R.	206a/bN,208N.	CH1, 3, 4.
3	102	SH136	Q	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bR,213a/bN, 214R,215N.	206a/bN,208N.	CH1, 3, 4.
4	102	SH138	P	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bR,213a/bN, 214N.	206a/bN,208N.	CH1, 3, 4.
5	102	SH140	N	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bN,217N, 218N, 221R.	206a/bN, (208N OR 209R)	CH1, 3, 4, 5.
6	102	SH142	M	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bN,217N, 218N, 221N.	206a/bN, (208N OR 209R)	CH1, 3, 4, 5.
7	102	SH144	L	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bN,217N, 218R, 219R.	206a/bN, (208N OR 209R)	CH1, 3, 4, 5.
8	102	SH146	K	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bN,217N, 218R, 219N,220R.	206a/bN, (208N OR 209R)	CH1, 3, 4, 5.
9	102	SH148	J	201a/bN,203a/bN,207a/bR, 210a/bR,212a/bN,217N,	206a/bN, (208N OR 209R)	CH1, 3, 4, 5.

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				218R, 219N,220N.		
10	102	SH108	BB	201a/bN,203a/bN,207a/bR, 210a/bN.	206a/bN,	CH1, 3.
11	102	SH106	BA	201a/bN,203a/bN,207a/bN.	-	CH1.
12	102	SH116	GL	201a/bR,203a/bN,.	202N.	CH1, 2.
13	102	ENGINE SDG	ES1	201a/bR,203a/bN,.	202N.	CH1, 2.
14	104	WASHIN G PIT	CS	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bR, 213a/bR,	206a/bR, 208N.	CH1, 2, 3, 4.
15	104	SH134	R	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bR, 213a/bN, 214R, 215R.	206a/bN, 208N.	CH1, 2, 3, 4.
16	104	SH136	Q	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bR, 213a/bN, 214R, 215N.	206a/bN, 208N.	CH1, 2, 3, 4.
17	104	SH138	P	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bR, 213a/bN, 214N.	206a/bN, 208N.	CH1, 2, 3, 4.
18	104	SH140	N	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bN, 217N, 218N, 221R.	206a/bN, (208N OR 209R)	CH1, 2, 3, 4, 5.
19	104	SH142	M	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bN, 217N, 218N, 221N.	206a/bN, (208N OR 209R)	CH1, 2, 3, 4, 5.
20	104	SH144	L	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bN, 217N, 218R, 219R.	206a/bN, (208N OR 209R)	CH1, 2, 3, 4, 5.
21	104	SH146	K	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bN, 217N, 218R, 219N, 220R.	206a/bN, (208N OR 209R)	CH1, 2, 3, 4, 5.
22	104	SH148	J	202R,201a/bN,203a/bR, 207a/bR,210a/bR,212a/bN, 217N, 220N.	206a/bN, (208N OR 209R)	CH1, 2, 3, 4, 5.
23	104	SH108	BB	202R,201a/bN,203a/bR, 207a/bR,210a/bN.	206a/bN.	CH1, 2, 3.
24	104	SH106	BA	202R,201a/bN,203a/bR, 207a/bN.	-	CH1, 2, 3.
25	104	SH116	GL	202R,201a/bN,203a/bN,	-	CH1, 2.
26	104	ENGINE SDG	ES1	202R,201a/bN,203a/bN, .	-	CH1, 2.
27	105	ORD SDG	OD	207a/bN,203a/bR,201a/bN, 202R.		CH1, 2.
28	105	S3	UX	207a/bN,203a/bN,201a/bN,	-	CH1.
29	106	SH124	BG	224a/bR,225a/bR,	231a/bN	CH6, 7, 8.
30	106	SH118	BF	224a/bR,225a/bN,226a/bN.	-	Released by SH-118/ CH6, 7.,
31	106	SH114	BE	224a/bN,226a/bN.	-	Released by SH-114/ CH6.
32	107	ORD SDG	OD	203a/bN,201a/bN, 202R.	-	CH1, 2.
33	107	S3	UX	203a/bN,201a/bR,	202N	CH1, 2.

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(Kush Gupta)
Dy. CSTE/PU/TDL

Dy. CSTE/TDL

34	108	SH124	BG	224a/bR,225a/bR,	231a/bN.	CH6, 7, 8.
35	108	SH118	BF	224a/bN,225a/bN,226a/bN.	-	Released by SH-118/ CH6, 7.
36	108	SH114	BE	224a/bN,225a/bN,226a/bR.	240a/bN.	Released by SH-4 with 227 a/bN/ CH6, 7, 10.
37	111	ORD SDG	OD	210a/bN,207a/bR,203a/bR, 201a/bN,202R.	207a/bN,206a/bN	CH1, 2, 3.
38	111	S3	UX	210a/bN,207a/bR,203a/bN, 201a/bN.	206a/bN	CH1, 3.
39	111	SHUNTING NECK	SN	210a/bN,207a/bN,206a/bR.	-	CH1, 3.
40	112	WASHING PIT	CS	206a/bN,208R,209R, 212a/bN,213a/bR.	-	CH3, 4.
41	112	SH134	R	206a/bN,208R,209R, 212a/bN,213a/bN,214R, 215R.	-	CH3, 4.
42	112	SH136	Q	206a/bN,208R,209R, 212a/bN,213a/bN,214R, 215N.	-	CH3, 4.
43	112	SH138	P	206a/bN,208R,209R, 212a/bN, 213a/bN, 214N.	-	CH3, 4.
44	112	SH140	N	206a/bN,208R,209N, 210a/bN,212a/bN,217N, 218N, 221R.	-	CH3, 4, 5.
45	112	SH142	M	206a/bN,208R,209N, 210a/bN,212a/bN,217N, 218N, 221N.	-	CH3, 4, 5.
46	112	SH144	L	206a/bN,208R,209N, 210a/bN,212a/bN,217N, 218R, 219R.	-	CH3, 4, 5.
47	112	SH146	K	206a/bN,208R,209N, 210a/bN,212a/bN,217N, 218R, 219N, 220R.	-	CH3, 4, 5.
48	112	SH148	J	206a/bN,208R,209N, 210a/bN,212a/bN,217N, 218R, 219N, 220N.	-	CH3, 4, 5.
49	112	SH124	BG	206a/bN,208R,209N, 210a/bN,212a/bN,217R, 225a/bN.	-	CH3, 4, 5,7, 8.
50	112	SH108	BB	206a/bR,207a/bN,210a/bN.	208N	CH1, 3.
51	114	SH172	F	227a/bR,235a/bR,236a/bR,	228a/bN,232a/bN, 237N,240a/bN.	CH6, 9,10, 12.
52	114	SH174	E	227a/bR,235a/bR,236a/bN, 237R.	228a/bN,240a/bN.	CH6, 9,10, 12.
53	114	ENGINE SDG	ES2	227a/bR,235a/bN,241a/bR, 240a/bR.	228a/bN.	CH6, 10, 12.
54	114	SH176	D	227a/bR,235a/bN,241a/bR, 240a/bN.	228a/bN.	CH6, 10, 12.
55	114	SH178	C	227a/bR,235a/bN,241a/bN.	228a/bN,240a/bN.	CH6, 10, 12.
56	114	SH162	B	227a/bN,228a/bN,246a/bN.	-	CH6, 12.
57	114	SH160	A	227a/bN,228a/bR,245a/bN, 246a/bN,247a/bN.	244N	CH6, 12, 13.
58	114	SALON	TS	227a/bN,228a/bR,245a/bN,	244N	CH6, 12, 13.

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		SDG		246a/bN,247a/bR.		
59	116	SH120	BD	243a/bN,	-	i. Released by SH-120 ii. Route released after 120 sec. iii.CH11.
60	116	SH122	AS	243a/bR,	-	i. Route released by after 120 sec. ii. CH11.
61	117	SH107	GL	243a/bR,	-	i. Route released by after 120 sec. ii. CH11.
62	118	SH172	F	227a/bN 235a/bR, 236a/bR	232a/bN, 237N, 240a/bN.	iii.CH6, 9, 10.
63	118	SH174	E	227a/bN,235a/bR,236a/bN, 237R.	240a/bN.	CH6, 9, 10.
64	118	ENGINE SDG	ES2	227a/bN,235a/bN,241a/bR, 240a/bR.	-	CH6, 10.
65	118	SH176	D	227a/bN,235a/bN,241a/bR, 240a/bN.	-	CH6, 10.
66	118	SH178	C	227a/bN,235a/bN,241a/bN.	240a/bN	CH6, 10.
67	120	SH162	B	244R,228a/bN,245a/bN, 246a/bR.	247a/bN	CH12, 13.
68	120	SH160	A	244R,228a/bN,245a/bN, 246a/bN. 247a/bN.	-	CH12, 13.
69	120	SALON SDG	TS	244R,228a/bN,245a/bN, 246a/bN. 247a/bR.	-	CH12, 13.
70	121	SH117	AS	246a/bR, 245a/bR.	247a/bN, 244N.	CH12, 13.
71	121	SH107	GL	246a/bR,245a/bN,228a/bN, 244R. 243a/bN.	247a/bN,	i. Shunt back from SH-120 ii.CH11, 12, 13.
72	121	SH105	BA	246a/bN,228a/bN,227a/bN, 226a/bN. 224a/bN.	-	i. Shunt back from SH-114 ii.CH6, 12.
73	121	SH111	BB	246a/bN,228a/bN,227a/bN, 226a/bR.225a/bN,224a/bN.	240a/bN.	i. Shunt back from SH-114 ii.CH6, 12, 7, 10.
74	122	SH162	B	245a/bR,246a/bR.	247a/Bn,244N.	CH12, 13.
75	122	SH160	A	245a/bR,246a/bN,247a/bN.	244N.	CH12, 13.
76	122	SALON SDG	TS	245a/bR,246a/bN,247a/bR.	244N.	CH12, 13.
77	123	SH117	AS	247a/bN,246a/bN,245a/bR.	244N.	CH12, 13.
78	123	SH107	GL	247a/bN,246a/bN,245a/bN, 228a/bN,244R,243a/bN.	-	i. Shunt back from SH-120 ii.CH11, 12, 13.
79	123	SH105	BA	247a/bN,246a/bN,245a/bN, 228a/bR,227a/bN,226a/bN, 224a/bN.	244N.	i. Shunt back from SH-114 ii.CH6, 12, 13.
80	123	SH111	BB	247a/bN,246a/bN,245a/bN, 228a/bR,227a/bN,226a/bR, 225a/bN,224a/bN.	244N,240a/bN.	i. Shunt back from SH-114 ii.CH6, 7,10, 12, 13.

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81	124	SH150	H	230a/bR	231a/bN	CH8.
82	124	SH168	G	230a/bN,231a/bN,233R.	-	CH8.
83	124	SH172	F	230a/bN,231a/bN,233N, 232a/bN,236a/bN.	-	CH8, 9.
84	124	MEDICAL VAN SDG	MS	230a/bN,231a/bR.	-	CH8.
85	125	SH117	AS	247a/bR,246a/bN,245a/bR.	-	CH 12, 13.
86	125	SH107	GL	247a/bR,246a/bN,245a/bN, 228a/bN,244R,243a/bN.	-	i. Shunt back from SH-120 CH11, 12, 13.
87	125	SH105	BA	247a/bR,246a/bN,245a/bN, 228a/bR,227a/bN,226a/bN, 224a/bN.	244N.	i. Shunt back from SH-114 ii.CH6, 12, 13.
88	125	SH111	BB	247a/bR,246a/bN,245a/bN, 228a/bR,227a/bN,226a/bR, 225a/bN,224a/bN.	244N,240N.	i. Shunt back from SH-114 ii.CH6, 7, 12, 13.10.
89	126	SH172	F	232a/bR,236a/bN.	-	CH9.
90	127	SH105	BA	225a/bR, 224a/bR.	-	CH6, 7.
91	127	SH111	BB	225a/bR ,224a/bN.	-	CH6, 7.
92	127	SHUNTING NECK	SN	225a/bN,217R,212a/bN, 210a/bN,209N,208R, 206a/bN.	-	CH3,4,5, 7.
93	129	SH105	BA	241a/bN,235a/bN,227a/bR, 226a/bN,224a/bN.	240a/bN	i. Shunt back from SH-114 ii.CH6, 10.
94	129	SH111	BB	241a/bN,235a/bN,227a/bN, 226a/bN,225a/bN,224a/bN.	240a/bN	i. Shunt back from SH-118 ii.CH6, 7,10.
95	130	WELDING SHOP DEPT.	WD	262R,263N,265N,268a/bN, 274N,279a/bN, 270R.	-	CH14, 19, 22.
96	130	SH190	U	262R,263N,265N,268a/bN, 274N,279a/bR,286N.287N.	270N	CH14, 19, 22,23,24.
97	131	SH105	BA	241a/bR,240a/bN,235a/bN, 227a/bR,226a/bN,224a/bN.	-	i. Shunt back from SH-114 ii.CH6, 10.
98	131	SH111	BB	241a/bR,240a/bN,235a/bN, 227a/bN,226a/bN,225a/bN. 224a/bN.	-	i. Shunt back from SH-118 ii.CH6, 7,10.
99	132	WELDING SHOP DEPT.	WD	268a/bR,274N,279a/bN, 270R.	-	CH19, 22.
100	132	SH190	U	268a/bR,274N,279a/bR,	270N	CH19, 22, 23, 24.

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				286N, 287N.		
101	133	SH105	BA	240a/bR,241a/bR,235a/bN, 227a/bR,226a/bN,224a/bN.	-	i. Shunt back from SH-114 ii.CH6, 10.
102	133	SH111	BB	240a/bR,241a/bR,235a/bN, 227a/bN,226a/bN,225a/bN. 224a/bN.	-	i. Shunt back from SH-118 ii.CH6, 7, 10.
103	134	WELDING SHED DEPT.	WD	263R,265N,268a/bN,274N, 279a/bN.270R.	262N.	CH14, 19, 22.
104	134	SH190	U	263R,265N,268a/bN,274N, 279a/bR,286N, 287N.	262N.270N	CH14,19, 22, 23, 24.
105	135	SH105	BA	237R,236a/bN,235a/bR, 227a/bR,226a/bN,224a/bN.	240a/bN.	i. Shunt back from SH-114 ii.CH6, 9, 10.
106	135	SH111	BB	237R,236a/bN,235a/bR, 227a/bN,226a/bN,225a/bN, 224a/bN.	240a/bN.	i. Shunt back from SH-118 ii.CH6, 7, 9, 10.
107	136	WELDING SHOP DEPT.	WD	264N,265R,268a/bN,274N, 279a/bN.270R.	262N.	CH14, 19, 22.
108	136	SH190	U	264N,265R,268a/bN,274N, 279a/bR, 286N, 287N.	262N.270N	CH14,19, 22, 23, 24.
109	137	SH105	BA	236a/bR,235a/bR,227a/bR, 226a/bN,224a/bN.	232a/bN,237N, 240a/bN.	i. Shunt back from SH-114 ii.CH6, 9, 10.
110	137	SH111	BB	236a/bR,235a/bR,227a/bN, 226a/bN,225a/bN,224a/bN.	232a/bN,237N, 240a/bN.	i. Shunt back from SH-118 ii.CH6, 7, 9, 10.
111	137	SH139	MS	236a/bN, 232a/bR.	-	CH 9.
112	137	SH141	RT	236a/bN,232a/bN.	-	CH 9.
113	138	WELDING SHOP DEPT.	WD	264R,265R,268a/bN,274N, 279a/bN.270R.	262N.	CH14, 19, 22.
114	138	SH190	U	264R,265R,268a/bN,274N, 279a/bR,286N, 287N.	262N.270N	CH14,19, 22, 23, 24.
115	139	SH127	BG	231a/bR,230a/bN.	-	CH8.
116	140	WELDING SHOP DEPT.	WD	267R,269a/bN,274R, 279a/bN, 270R.	262N,268a/bN.	CH14, 18, 19, 20, 22.
117	140	SH190	U	267R,269a/bN,274R, 279a/bR, 286N, 287N.	262N.268a/bN, 270N.	CH14,18,19, 20,22,23,24.
118	140	SH192	T	267R,269a/bR,275a/bR, 280a/bR, 289a/bR..	284N.274N.	CH18,20,21,22,23,25.
119	141	SH127	BG	233N,231a/bN,230a/bN.	-	CH8.
120	142	WELDING SHOP DEPT.	WD	267N,269a/bN,274R, 279a/bN, 270R.	262N,268a/bN.	CH14, 18, 19, 20, 22.

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121	142	SH190	U	267N,269a/bN,274R, 279a/bR, 286N, 287N.	262N.268a/bN, 270N.	CH14,18,19, 20,22,23,24.
122	142	SH192	T	267N,269a/bR,275a/bR, 280a/bR, 289a/bR..	274N.284a/bN.	CH18,20,21,22,23,25.
123	143	SH127	BG	233R,231a/bN,230a/bN.	-	CH8.
124	144	SH190	U	271N,272N,273N,269a/bN, 275a/bR,280a/bN,286N, 287N.	279a/bN.	CH18,20,21,22,23,24.
125	144	SH192	T	271N,272N,273N,269a/bN, 275a/bR,280a/bR,289a/bR.	284a/bN.	CH18,20,21,23,25.
126	146	SH190	U	271R,272N,273N,269a/bN, 275a/bR,280a/bN,286R, 287N.	279a/bN.	CH18,20,21,22,23,24.
127	146	SH192	T	271R,272N,273N,269a/bN, 275a/bR,280a/bR,289a/bR.	284a/bN.	CH18,20,21,23,25.(CH 26 W 260R)
128	148	SH190	U	272R,273N,269a/bN, 275a/bR,280a/bN,286R, 287N.	279a/bN.	CH18,20,21,22,23,24.
129	148	SH192	T	272R,273N,269a/bN, 275a/bR,280a/bR,289a/bR.	284a/bN.	CH18,20,21,23,25.
130	150	SH190	U	273R,269a/bN,275a/bR, 280a/bN,286R, 287N.	279a/bN.	CH18,20,21,22,23,24.
131	150	SH192	T	273R,269a/bN,275a/bR, 280a/bR,289a/bR.	284a/bN.	CH18,20,21,23,25.
132	151	SH127	BG	230a/bR.	231a/bN	CH8.
133	152	SH156	PX	253a/bR,254a/bR	252N	i. Released by SH-156 ii.CH31.
134	152		WS	253a/bN,252R	-	I Route released after 120sec. ii. CH31.
135	153	ORD SDG	OD	220N,219N,218R,217N, 212a/bN,210a/bR,207a/bR, 203a/bR,201a/bN,202R.	(208N OR 209R) 206a/bN,	i. S4 RECR proved in GR ii.CH1,2,3,4,5.
136	153	S3	UX	220N,219N,218R,217N, 212a/bN,210a/bR,207a/bR, 203a/bN,201a/bN.	(208N OR 209R) 206a/bN.	i. S4 RECR proved in GR ii.CH1, 3,4,5.
137	153	SHUNTIN G NECK	SN	220N,219N,218R,217N, 212a/bN,210a/bN,209N, 208R,206a/bN.	-	CH3,4,5.
138	154	SH156	PX	253a/bN,254a/bR	-	i. Released by SH-156 ii.CH31.
139	155	ORD SDG	OD	220R,219N,218R,217N, 212a/bN,210a/bR,207a/bR, 203a/bR,201a/bN,202R.	(208N OR 209R) 206a/bN,	i. S4 RECR proved in GR ii.CH1,2,3,4,5.
140	155	S3	UX	220R,219N,218R,217N, 212a/bN,210a/bR,207a/bR, 203a/bN,201a/bN.	(208N OR 209R) 206a/bN.	i. S4 RECR proved in GR ii.CH1, 3,4,5.
141	155	SHUNTIN G NECK	SN	220R,219N,218R,217N, 212a/bN,210a/bN,209N, 208R,206a/bN.	-	CH3,4,5.
142	156	S94	BX	257R,258a/bN,259a/bR, 294a/bN,295a/bR,297R, 299a/bR.	256a/bN,300N, 298a/bN.	i, Releases SH-152,154,164 ii.S99 RECR proved in

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						GR. iii.Shunt back from SH187 iv.CH25,26,27. 28,30.
143	156	STABLING LINE	SL	257R,258a/bN,259a/bR, 294a/bN,295a/bR,297R, 299a/bN,300R.	256a/bN.	i, Releases SH-152,154,164 ii.S99 RECR proved in GR. iii.Shunt back from SH187 iv.CH25,26, 28,30.
144	156	S98	DX	257R,258a/bN,259a/bR, 294a/bN,295a/bR,297N, 296a/bN.	256a/bN,300N.	i, Releases SH-152,154,156,164 ii.S99 RECR proved in GR. iii.Shunt back from SH187 iv.CH25,26, 28,30.
145	156	S96	CX	257R,258a/bN,259a/bN, 260a/bN.	256a/bN.	i, Releases SH-152,154, 164. iii.Shunt back from SH187 iii.CH26,30.
146	157	ORD SDG	OD	219R,218R,217N,212a/bN, 210a/bR,207a/bR,203a/bR, 201a/bN,202R.	(208N OR 209R) 206a/bN	i.S4 RECR proved in GR. ii.CH1,2,3,4,5.
147	157	S3	UX	219R,218R,217N,212a/bN, 210a/bR,207a/bR,203a/bN, 201a/bN.	(208N OR 209R) 206a/bN.	i.S4 RECR proved in GR. ii.CH1,3,4,5.
148	157	SHUNTIN G NECK	SN	219R,218R,217N,212a/bN, 210a/bN,209N,208R, 206a/bN.	-	CH3,4,5.
149	158	S94	BX	256a/bR,258a/bR,259a/bR, 294a/bN,295a/bR,297R, 299a/bR.	258a/bN,257N, 300N.	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH25,26, 27,28,30.
150	158	STABLING LINE	SL	256a/bR,258a/bR,259a/bR, 294a/bN,295a/bR,297R, 299a/bN,300R.	257N.	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH25,26, 28,30.
151	158	S98	DX	256a/bR,258a/bR,259a/bR, 294a/bN,295a/bR,297N, 296a/bN.	257N,300N.	i.S99 RECR proved in GR. ii.Shunt back from SH189 iii.CH25,26, 28,30.
152	158	S96	CX	256a/bR,258a/bR,259a/bN, 260a/bN.	257N.	i. S6 (IDH) locked ii. Shunt back from SH189 iii.CH26,30.
153	159	ORD SDG	OD	221N,218N,217N,212a/bN, 210a/bR,207a/bR,203a/bR,	(208N OR 209R) 206a/bN,	i.S4 RECR proved in GR ii.CH1,2,3,4,5.

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				201a/bN,202R.		
154	159	S3	UX	221N,218N,217N,212a/bN, 210a/bR,207a/bR,203a/bN, 201a/bN.	(208N OR 209R) 206a/bN.	i.S4 RECR proved in GR ii.CH1, 3,4,5.
155	159	SHUNTIN G NECK	SN	221N,218N,217N,212a/bN, 210a/bN,209N,208R, 206a/bN.	-	CH3,4,5.
156	160	194	BX	255a/bR,293a/bN,259a/bN, 294a/bN,295a/bR,297a/bR, 299a/bR.	298a/bN,300N.	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH25,26, 27,28,29.
157	160	STABLING LINE	SL	255a/bR,293a/bN,259a/bN, 294a/bN,295a/bR,297a/bR, 299a/bN,300R.	-	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH25,26, 28,29.
158	160	S98	DX	255a/bR,293a/bN,259a/bN, 294a/bN,295a/bR,297a/bN, 296a/bN.	300N.	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH25,26, 28,29.
159	160	S96	CX	255a/bN,258a/bR,256a/bN, 259a/bN,260a/bN.	257N.	i. Control to S6 (IDH) locked ii. Shunt back from SH189 iii.CH26,29,30.
160	161	ORD SDG	OD	221R,218N,217N,212a/bN, 210a/bR,207a/bR,203a/bR, 201a/bN,202R.	(208N OR 209R) 206a/bN.	i.S4 RECR proved in GR. ii.CH1,2,3,4,5.
161	161	S3	UX	221N,218N,217N,212a/bN, 210a/bR,207a/bR,203a/bN, 201a/bN.	(208N OR 209R) 206a/bN.	i.S99 RECR proved in GR. ii.CH1,3,4,5.
162	161	SHUNTIN G NECK	SN	221R,218N,217N,212a/bN, 210a/bN,209N,208R, 206a/bN.	-	CH3,4,5.
163	162	S94	BX	255a/bN,293a/bN,259a/bN, 294a/bN,295a/bR,297a/bR, 299a/bR.	298a/bN,300N.	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH29,26,25,28,27.
164	162	STABLING LINE	SL	255a/bN,293a/bN,259a/bN, 294a/bN,295a/bR,297a/bR, 299a/bN,300R.	-	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH29,26,25,28.
165	162	S98	DX	255a/bN,293a/bN,259a/bN, 294a/bN,295a/bR,297a/bN, 296a/bN.	300N.	i.S99 RECR proved in GR. ii.Shunt back from SH187 iii.CH29,26,25, 28.
166	162	S96	CX	255a/bN,293a/bN,259a/bN, 294a/bN,295a/bR,260a/bR,	-	i.S99 RECR proved in GR. ii.CH29,26,25.

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Sr.DSTE/Co./AGC

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167	163	ORD SDG	OD	214N,213a/bN,212a/bR, 210a/bR,207a/bR,203a/bR, 201a/bN,202R.	208N,206a/bN,	i.S4 RECR proved in GR. ii.CH1, 2, 3, 4.
169	163	S3	UX	214N,213a/bN,212a/bR, 210a/bR,207a/bR,203a/bN, 201a/bN.	208N,206a/bN.	i.S4 RECR proved in GR. ii.CH1, 3, 4.
170	163	SHUNTIN G NECK	SN	214N,213a/bN,212a/bN, 209R,208R,206a/bN.	-	CH3,4.
171	164	SH156	PX	254a/bN.	253a/bN.	i.Released by SH 156. ii. Route release by timer. iii.CH31.
172	165	ORD SDG	OD	215N,214R,213a/bN, 212a/bR,210a/bR,207a/bR, 203a/bR,201a/bN,202R.	208N,206a/bN,	i.S4 RECR proved in GR. ii.CH1, 2, 3, 4.
173	165	S3	UX	215N,214R,213a/bN, 212a/bR,210a/bR,207a/bR, 203a/bN,201a/bN.	208N,206a/bN.	i.S4 RECR proved in GR. ii.CH1, 3, 4.
174	165	SHUNTIN G NECK	SN	215N,214R,213a/bN, 212a/bN,209R,208R, 206a/bN.	-	CH3, 4.
175	167	ORD SDG	OD	215R,214R,213a/bN, 212a/bR,210a/bR,207a/bR, 203a/bR,201a/bN,202R.	208N,206a/bN,	i.S4 RECR proved in GR. ii. CH1, 2, 3, 4.
176	167	S3	UX	215R,214R,213a/bN, 212a/bR,210a/bR,207a/bR, 203a/bN,201a/bN.	208N,206a/bN.	i.S4 RECR proved in GR. II.CH1, 3, 4.
177	167	SHUNTIN G NECK	SN	215R,214R,213a/bN, 212a/bN,209R,208R, 206a/bN.	-	CH3, 4.
178	168	SH190	U	277R,275a/bN,280a/bN, 286R, 287N.	279a/bN, (284N OR 289R)	CH21,22,23,24,(25W280 R).
179	168	SH192	T	277R,275a/bN,280a/bR, 289a/bR.	284a/bN.	CH21,23,25. (26W260R)
180	169	ORD SDG	OD	213a/bR,212a/bR,210a/bR, 207a/bR,203a/bR,201a/bN, 202R.	208N,206a/bN,	i.S4 RECR proved in GR. ii.CH1, 2, 3, 4.
181	169	S3	UX	213a/bR,212a/bR,210a/bR, 207a/bR,203a/bN,201a/bN.	208N,206a/bN.	i.S4 RECR proved in GR. ii.CH1, 3, 4.

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182	169	SHUNTIN G NECK	SN	213a/bR,212a/bN,209R, 208R,206a/bN.	-	CH3, 4.
183	170	SH190	U	284a/bR,285a/bR,280a/bN, 289a/bN, 287R.	283N,279a/bN.	CH21,22,23,24,25.
184	170	SH192	T	284a/bR,285a/bR,280a/bN, 289a/bR.	283N.	CH21,23,25. (CH26W260R)
185	172	SH190	U	284a/bN,285a/bR,280a/bN, 289a/bN, 287R.	283N,279a/bN.	CH21,22,23,24,25.
186	172	SH192	T	284a/bN,285a/bR,280a/bN, 289a/bR.	283N.	CH21,23,25.
187	174	SH190	U	283R,285a/bN,280a/bN, 289a/bN,287R.	284a/bN. 279a/bN.	CH21,23,24,25.22.
188	174	SH192	T	283R,285a/bN,280a/bN, 289a/bR.	284a/bN.	CH21,23,25.
189	175	Loading/ Unloading Stabling Sdg	ST	253a/bN, 252R.	-	i. Route release by timer. ii.CH31.
190	176	SH192	T	292a/bR,293a/bN,289a/bN.	-	CH25,29.
191	178	SH192	T	292a/bN,293a/bN,289a/bN.	-	CH25,29.
192	179	SH159	M	270R,279a/bN,274R, 269a/bN, 267N.	262N,268a/bN.	CH14,18,19,20,22.
193	179	SH161	N	270R,279a/bN,274R, 269a/bN, 267R.	262N,268a/bN.	CH14,18,19,20,22.
194	179	SH163	P	270R,279a/bN,274N, 268a/bN, 265R,264R.	262N.	CH14,19,22.
195	179	SH165	Q	270R,279a/bN,274N, 268a/bN, 265R,264N.	262N.	CH14,19,22.
196	179	SH167	R	270R,279a/bN,274N, 268a/bN, 265N,263R.	262N.	CH14,19,22.
197	179	SICK SDG	SS	270R,279a/bN,274N, 268a/bN, 265N,263N, 262R.	-	CH14,19,22.
198	179	OIL SDG	OS	270R,279a/bN,274N, 268a/bR.	262N.	CH14,19,22.
199	183	SH143	G	286R,280a/bN,275a/bN, 277R.	279a/bN.	CH21,22,23.
200	183	SH151	H	286R,280a/bN,275a/bR, 269a/bN,273R.	279a/bN.	CH18,20,21,22,23.
201	183	SH153	J	286R,280a/bN,275a/bR, 269a/bN,273N,272R.	279a/bN.	CH18,20,21,22,23.
202	183	SH155	K	286R,280a/bN,275a/bR, 269a/bN,273N,272N,271R.	279a/bN.	CH18,20,21,22,23.
203	183	SH157	L	286R,280a/bN,275a/bR, 269a/bN,273N,272N,271N.	279a/bN.	CH18,20,21,22,23.
204	183	SH159	M	286N,279a/bR,274R, 269a/bN,267N.	270N,268a/bN, 262N.	CH14,18,19,20,22,23.
205	183	SH161	N	286N,279a/bR,274R, 269a/bN, 267R.	270N,268a/bN, 262N.	CH14,18,19,20,22,23.
206	183	SH163	P	286N,279a/bR,274N, 268a/bN, 265R, 264R.	270N, 262N.	CH14,19,22,23.
207	183	SH165	Q	286N,279a/bR,274N, 268a/bN,265R,264N.	270N, 262N.	CH14,19, 22, 23.
208	183	SH165	R	286N,279a/bR,274N,	270N, 262N.	CH14,19, 22, 23.

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				268a/bN,265N,263R.		
209	183	Sick SDG	SS	286N,279a/bR,274N, 268a/bN, 265N,263N, 262R.	270N.	CH14,19, 22, 23.
210	183	OIL SDG	OS	286N,279a/bR,274N, 268a/bR.	270N,262N.	CH14,19, 22, 23.
211	185	SH135	E	280a/bN,285a/bN,283R.	284a/bN.	CH21, 23.
212	185	SH137	F	280a/bN,285a/bR,284a/bN.	283N.	CH21 ,23.
213	185	A&D SDG	AS1	280a/bN,285a/bR,284a/bR.	283N.	CH21 ,23.
214	185	SH143	G	280a/bR,275a/bN,277R.	284a/bN.	CH21 ,23.
215	185	SH151	H	280a/bR,275a/bR,269a/bN, 273R.	284a/bN,277N.	CH18,20,21 ,23.
216	185	SH153	J	280a/bR,275a/bR,269a/bN, 273N,272R.	284a/bN,277N.	CH18,20,21 ,23.
217	185	SH155	K	280a/bR,275a/bR,269a/bN, 273N,272N,271R.	284a/bN,277N.	CH18,20,21 ,23.
218	185	SH157	L	280a/bR,275a/bR,269a/bN, 273N,271N,272N.	284a/bN,277N.	CH18,20,21 ,23.
219	185	SH159	M	280a/bR,275a/bR,269a/bR, 267N.	284a/bN,274N, 277N.	CH18,20,21, 22,23.
220	185	SH161	N	280a/bR,275a/bR,269a/bR, 267R.	284a/bN,274N, 277N.	CH18,20,21, 22,23.
221	187	Stabling SDG	ST	295a/bR,294a/bN,259a/bR, 258a/bN,257R,254a/bR, 253a/bR.	256a/bN,252N, 290a/bN.	i.S99 RECR proved in GR ii.CH24,25,26, 30,31.
222	187	BAY LINE	BL	295a/bR,294a/bN,259a/bR, 258a/bN,257R,254a/bR, 253a/bN.	256a/bN, 290a/bN.	i.S99 RECR proved in GR ii.CH24,25,26, 30,31, 1GF.
223	187	BAY P.F. LINE	BP	295a/bR,294a/bN,259a/bR, 258a/bN,257R,254a/bN.	290a/bN,253a/bN, 256a/bN.	i.S99 RECR proved in GR ii.CH24,25,26, 30,31, 1GF.
224	187		SC	295a/bR,294a/bN,259a/bR, 258a/bR,256a/bR.	290a/bN,257N.	i.S99 RECR proved in GR ii.CH24,25,26, 30.
225	187	SH123	A	295a/bR,294a/bN,259a/bN, 293a/bN,255a/bR.	290a/bN.	i.S99 RECR proved in GR ii.CH24,25,26, 29.
226	187	SH121	B	295a/bR,294a/bN,259a/bN, 293a/bN,255a/bN.	290a/bN.	i.S99 RECR proved in GR ii.CH24,25,26, 29.
227	187	SH129	C	295a/bN,290a/bN,294a/bN, 289a/bN.293a/bN,292a/bN.	-	CH24,25,26, 29.
228	187	SH131	D	295a/bN,290a/bN,294a/bN, 289a/bN.293a/bN,292a/bR.	-	CH24,25,29.
229	187	SH185	W	295a/bN,290a/bN,294a/bN, 289a/bR.	-	I. Released by SH 185 ii. CH24,25.
230	187	SH183	V	295a/bN,290a/bR,287N.	-	i. Released by SH 183 ii. CH24,25.
231	189	Stabling SDG	ST	259a/bN,258a/bN,257R, 254a/bR,253a/bR.	252N,256a/bN.	CH26,30,31.
232	189	BAY LINE	BL	259a/bN,258a/bN,257R, 254a/bR,253a/bN.	256a/bN.	CH26,30,31.
233	189	BAY P.F. LINE	BP	259a/bN,258a/bN,257R, 254a/bN.	253a/bN , 256a/bN.	i. 254T to be proved in bearthing track ii.CH26,30,31. 1GF.
234	189	SC	SC	259a/bN,258a/bR,256a/bR.	257N.	CH26,30.
235	189	SH123	A	259a/bN,258a/bR,256a/bN,	257N.	CH26,29,30.

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				255a/bN.		
236	190	S94	BX	290a/bN,288R,298a/bN, 299a/bN.	-	i. Control to 7/107(NJPC) locked ii.CH24,27,28.
237	190	STABLING LINE	SL	290a/bR,295a/bN,297R, 299a/bN.300R	-	i. Shunt back from SH 187 ii.CH24,25,28.
238	190	S98	DX	290a/bR,295a/bN,297N, 296a/bN.	300N.	i. Shunt back from SH 187 ii.CH24,25,28.
239	192	S94	BX	290a/bN,294a/bN,295a/bN, 297R,299a/bR.	300N,298a/bN	i. Control to 7/107(NJPC) locked ii. Shunt back from SH 187 iii.CH24,25,27,28.
240	192	STABLING LINE	SL	294a/bN,290a/bN,295a/bN, 297R,299a/bN.300R	-	i.Shunt back from SH 187 ii.CH24,25,28.
241	192	S98	DX	294a/bN,290a/bN,295a/bN, 297N,296a/bN.	300N.	i.Shunt back from SH 187 ii.CH24,25,28.
242	192	S96	CX	294a/bR,295a/bN,260a/bR.	(300N OR 290R)	i. 99 ECPR to be proved in GR ii.CH25,26, (CH28 OR CH24)
243	193	SH187	Y	300R,299a/bN,297R.	-	i. Released by SH-187 ii.CH28.
244	194	S94	BX	298a/bR,299a/bN.	288N.	CH27,28,
245	195	SH187	Y	299a/bR,297R.	288N,298a/bN, 300N.	i. Control to 7/107(NJPC) ii. Released by SH-187 iii.CH24,27,28.
246	195	SH185	W	299a/bN,298a/bN,288R, 290a/bN,287R,289a/bN.	-	i. Control to 7/107(NJPC) ii. Released by SH-185 iii.CH24,25,27,28.
247	195	SH183	V	299a/bN,298a/bN,288R, 290a/bN,287N.	-	i. Control to 7/107(NJPC) ii. Released by SH-183 iii.CH24,27,28.
248	195	A&D SDG	AS2	299a/bN,298a/bR.	288N.	i. Control to 7/107(NJPC) ii. Released by SH-183 iii.CH24,27,28.
249	197	SH189	X	260a/bN.	-	i. Released by SH-189 ii.Route release by timer iii.CH26.

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250	197	SH121	B	260a/bR,295a/bN,294a/bN, 259a/bN,293a/bN, 255a/bN	-	i.S99 ECPR proved in GR ii.CH25,26,29.
251	197	SH129	C	260a/bR,295a/bN,294a/bR, 289a/bN,293a/bN, 292a/bN	(300N OR 290R)	i.S99 ECPR proved in GR ii. Ii.CH25,26,29. (CH28 OR CH24)
252	197	SH131	D	260a/bR,295a/bN,294a/bR, 289a/bN,293a/bN, 292a/bR	(300N OR 290R)	i.S99 ECPR proved in GR ii.CH25,26,29. (CH28 OR CH24), CH 10 W 241N
253	197	SH185	W	260a/bR,295a/bN,294a/bR, 289a/bR.	(300N OR 290R)	i.S99 ECPR proved in GR. ii.Released by SH-185. iii. CH25,26, (CH28 OR CH24)
254	199	SH187	Y	296a/bN,297N.	300N.	i. Released by SH-189 ii.Route release by timer iii.CH28.
255	160	S92	T	255a/bR, 293a/bR, 289a/bN.	-	-
256	162	S92	T	255a/bN, 293a/bR, 289a/bN.	-	-

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Annexure - 'B' to Appendix - B

OPERATION OF SIGNALLING GEARS WITH VIDEO DISPLAY UNIT

STAND BY OPERATION OF SIGNALS, POINTS, CRANK HANDLES, SIDING POINTS, BY VIDEO DISPLAY UNIT (P.C):

1.0 **Interlocking System Configuration**: In addition to the panel, an operator console (VDU) consists of a Computer with a high-resolution colour monitor, keyboard and pointing device (mouse) is provided. One of the serial ports in computer will be connected to the Microlok II CPU board for exchange of control and indication messages. Software (VDU) will be provided to display track mimic diagram of the station on the VDU and that it provides access to all functions through menus. When a function is selected, an appropriate guide format will be displayed along with pertinent information, to enter the correct command (route request, point normal or reverse request) etc.

The computer or panel may be used for controlling and monitoring the station, one of that may be on- line at any given time. However, indications on the track mimic diagram of both VDU and panel will be dynamically updated.

1.1 This VDU (P.C.) is provided as stand by for operation of signals, points, crank handles, and siding points with track diagram. A track mimic diagram will be displayed on the VDU (P.C.), which is exact replica of operation cum indication panel and suits the yard plan as per SI plan. Key board/ Mouse is provided to operate VDU (P.C)

One two-position switch is provided on the panel board as a means of change over from operation cum indication panel to VDU (P.C.). Whenever the switch is turned to pc position it will enable SM/ASM to operate all functions from VDU and on the other hand when it is kept in the Panel position the VDU will be inoperative and operation of all function will be possible from operation cum indication panel. The following procedure shall be adopted.

1.2 **Computer control**- Video Display unit as the name implies a computer with VDU software can act as control panel for the Microlok II interlocking system. This is made possible, only when the user selects the PANEL /PC switch to PC mode in the conventional panel.

The Operator console interfaces with Microlok II and provides means to control and monitor the station interlocking. When the computer is chosen for control and it becomes on-line, any input from control panel to the Microlok II is considered invalid and is not processed by the application software. The main menu title bar is displayed on the first line of the VDU the user may invoke any of the control/display functions by selecting the appropriate menu item. Some menu items involve a two-tier process, where in te sub-menu items are displayed in a pop-up window, which is displayed when the menu items is invoked.

The Display option menu enables the user to view track mimic display or status of input/output bits. A track mimic diagrams is displayed on the VDU, which is a replica of control-cum-indication panel. When track mimic diagram is displayed, the user can input control commands by selecting the required device (signal, point etc.) to be operated, which provides associated operational functions (route request, point call etc.) available to the selected device. The current status of signals, points, tracks etc. is dynamically updated on the VDU as well as conventional panel.

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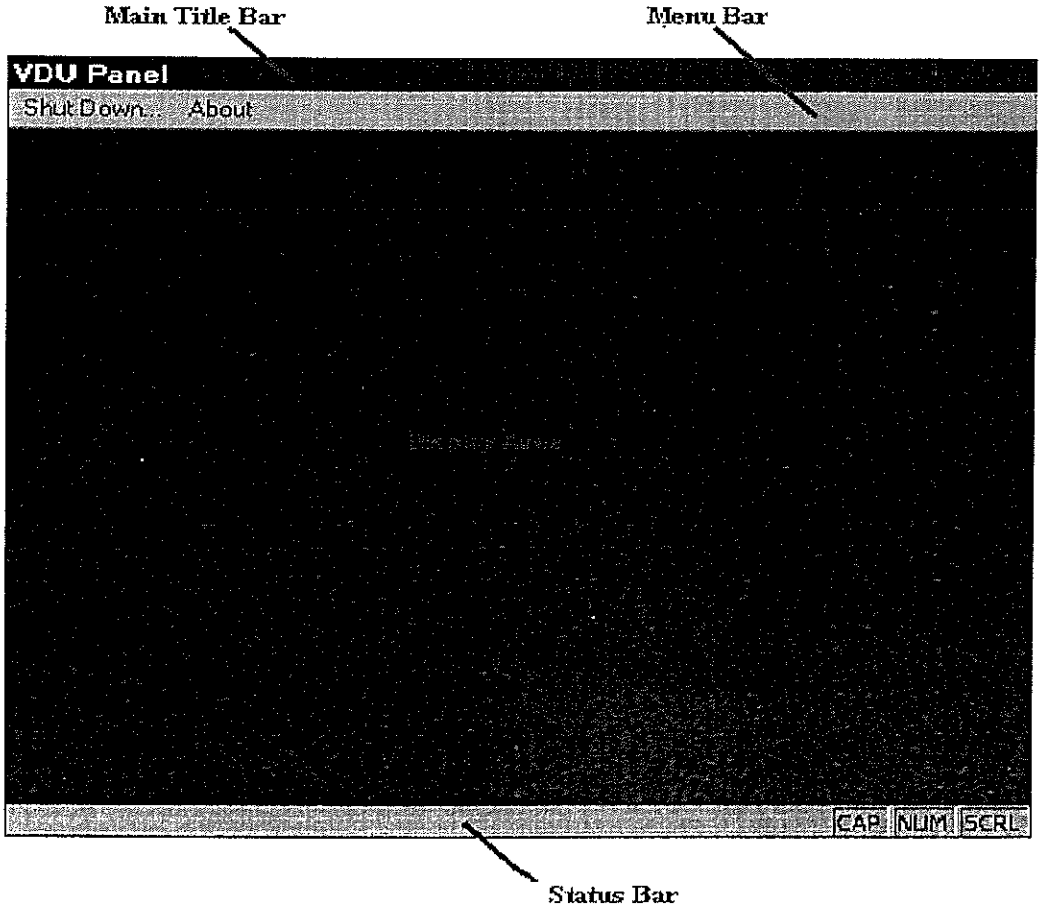
R	G	Y

Logo is provided on the top right hand side of VDU for matching of colours used in yard configuration. If any colour which is provided in yard configuration is not matching with colours provide in the logo then the ASM on duty will suspend the working from VDU. The ESM/JE on duty will be informed immediately, in this regard by the ASM on duty, through a memo.

1.3 **Operational description**: - The VDU software is as per Windows Graphical User Interface (GUI) design standards, with multiple window capability.

On start-up, serial communication between Microlok II VDU PC is established based on port setting information available in the stored database. After the port setting initialization, the main window of the VDU is displayed along with the mimic diagram. This window, along with the keyboard or mouse, provides the Graphic User Interface (GUI), which is an important functional feature of VDU. The main window is depicted below showing the various window components. Menu functions are provided for selecting the VDU display and control functions. A detailed description of the GUI is provided in next section.

1.4 VDU can be used as a monitor of viewing the operations while the operations are being carried out from panel 2.0 Graphical User Interface



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On the main window of the VDU, controls are provided to invoke all the functions. The main Window consists of:

1) Main Title Bar
2) Display Area
3) Status Bar
4) Menu Bar

2.1.1 **Main Title Bar**
The main title bar is seen on the topmost part of the application window wherein the name of the application is displayed.

2.1.2 **Display Area**
The Display Area of the screen is used by VDU, to display the various information pertaining to its operation. The *ASM* may select the information to be displayed, such as the Control Cum-Indication Panel using the Menu Bar.

2.1.3 **Status Bar**
The status bar, at the bottom of the frame window, displays three panes. The left pane shows the status of Caps-Lock key, the middle pane shows the status of Num-Lock key and the right pane shows the status of Scroll-Lock key respectively.

2.1.4 **The Menu Bar**
The Menu bar is displayed directly below the main title bar. This contains TWO pop up menus, which when opened show the different options a *ASM* can select to invoke a VDU function. The Menu bar displays the following menu.

a) Shut Down

b) About

The menu can be selected by clicking the left mouse button or by using the 'Alt key' associated with it. When the user selects the menu, the corresponding submenu pops up. The *ASM* can select the choice by moving the cursor over the submenu and left clicking mouse button or by using the 'Ctrl key' associated with submenu items.

2.2 **Main Menu**
When the application is started, the VDU menu bar is displayed as shown above.

2.2.1 **Shut Down**: This option is provided for the ASM to exit the VDU screen and Computer will go for Shutdown automatically.

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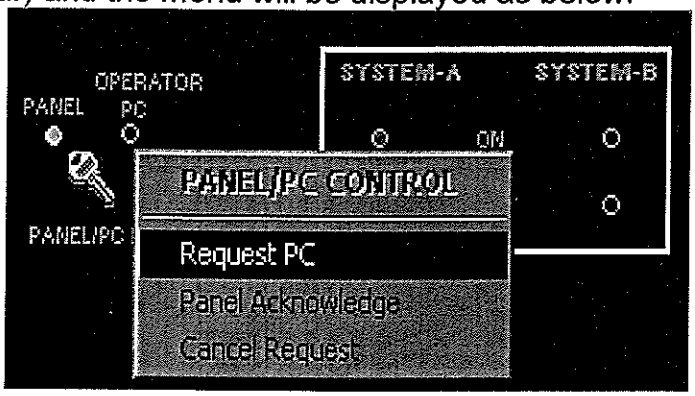
3.0 VDU PANEL OPERATIONS

In this appendix ,screen shots of VDU are shown in general only for demo to various signaling operations as a typical working

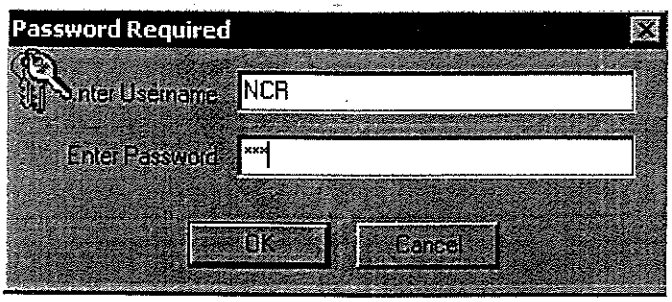
3.1 CHANGEOVER FROM PANEL WORKING TO VDU:

The Control cum Indication Panel is provided with a key named as PANEL / VDU SWITCH.

Now, in the VDU monitor, click near Panel/PC switch (shown as Key in PINK colour) and the menu will be displayed as below:



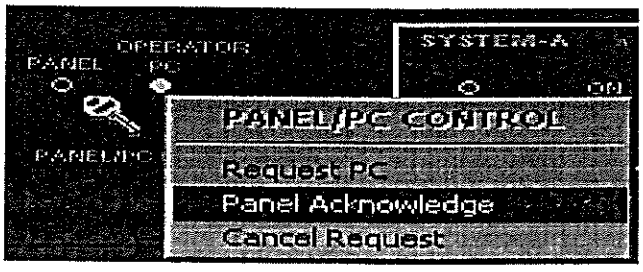
Click the "Request PC" menu and it will ask for a Name and Password as below;



After providing the correct name and password, then "PC" indication will start flashing on the panel. Now, on the Panel, we have to first turn this switch from Panel (left position) to VDU (right position). PC indication becomes steady now. The mode of working is now changed to VDU.

3.2 CHANGE-OVER FROM PC WORKING TO PANEL:

Now in the Control Panel, please turn the switch to Panel mode and Panel indication will start flashing. Now, in the VDU monitor, click on Panel / PC switch and then menu will be displayed as below:



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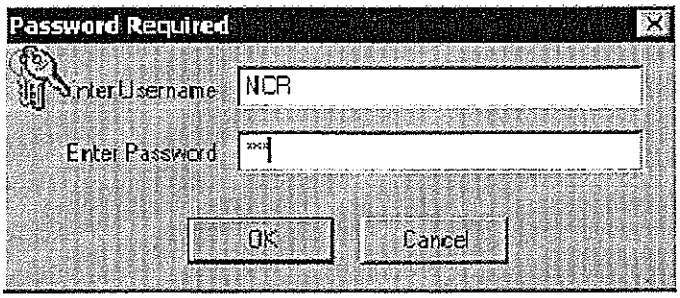
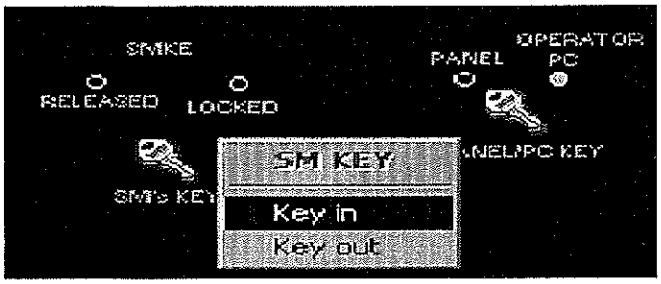
Click the "Panel Acknowledge" menu, then Panel indication will be steady after giving name and password as below:

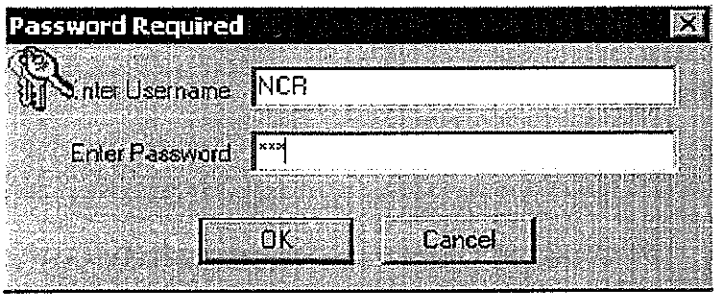


3.3 SM KEY IN:

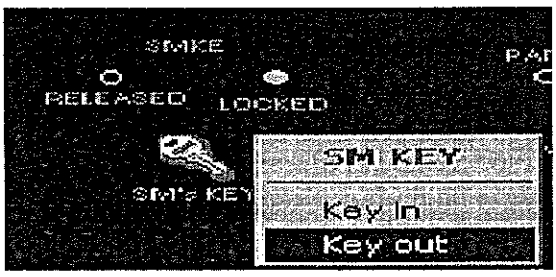
To enable Signal clearing and Point operation etc., we have to activate the SM key shown in the VDU panel. Go near SM key and click. Now select "Key in" in the menu as shown below:



It will now ask for name and password as shown in above two cases. Please provide the name and password for activating all other menus, otherwise we will not be able to clear Signal or operate a point etc.,



In case, we want to disable SM Key in VDU, select SM "Key out" as shown below:



This will disable all pop-up menus and Locked indication will appear. To enable again, select "Key in" and give name and password as explained above.

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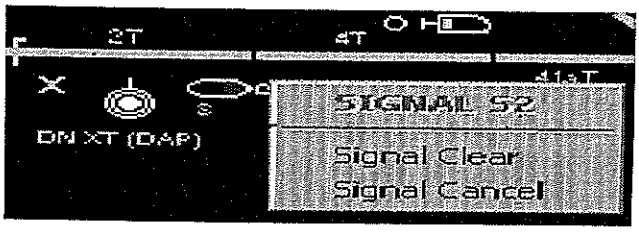
NOTE:- ALL THE YARD SKETCHES DEPICTED BELOW ARE FOR EXPLAINING THE OPERATION FROM VDU THERE MAY NOT BE ANY RESEMBLENCE WITH THE YARD OF KUBERPUR STATION.

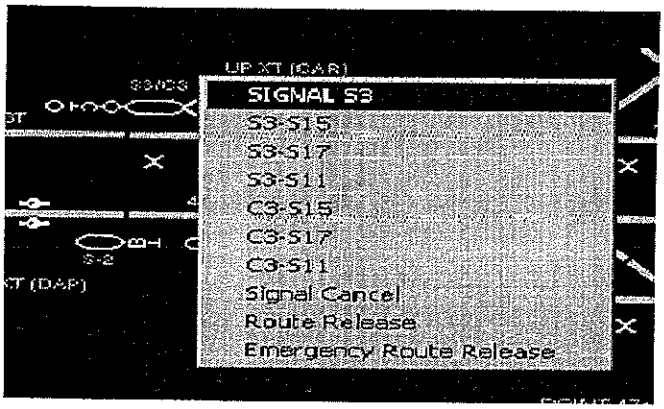
3.4 **TO CLEAR AND CANCEL AN ADVANCE STARTER SIGNAL:**

When we click near the Signal, a pop-up menu will appear as below:



Once Line clear is obtained and to clear the Signal click, "Signal clear". Then, the "GLKE" indication in Yellow colour will appear and Signal indication will go to "GREEN". If we want to cancel the Signal, select "Signal cancel" in the pop-up menu.

3.5 **TO CLEAR, CANCEL AND ROUTE RELEASE THE HOME SIGNAL** (S3 in this case) and Calling on Signal (CO3):



Click on the CO3/S3 Signal and all the possible routes for Main Signal S3 and Calling 'ON' CO3 will be displayed as shown above.

Main Signal: -

(i) When we click on the S3 – S15, the Loop line is selected and hence the upper limb of route indicator symbol will flash in yellow colour till UECR input is received and will be steady once UECR is received. Signal indication will go to yellow colour depicting the yard status. If Yellow lamp is failed at field, only in VDU Panel and Control cum Indication Panel, the yellow indication will flash (and NOT in the field, as 110V feed is cut by dropping the concerned GR / HR relay through GENCR / HENCR).

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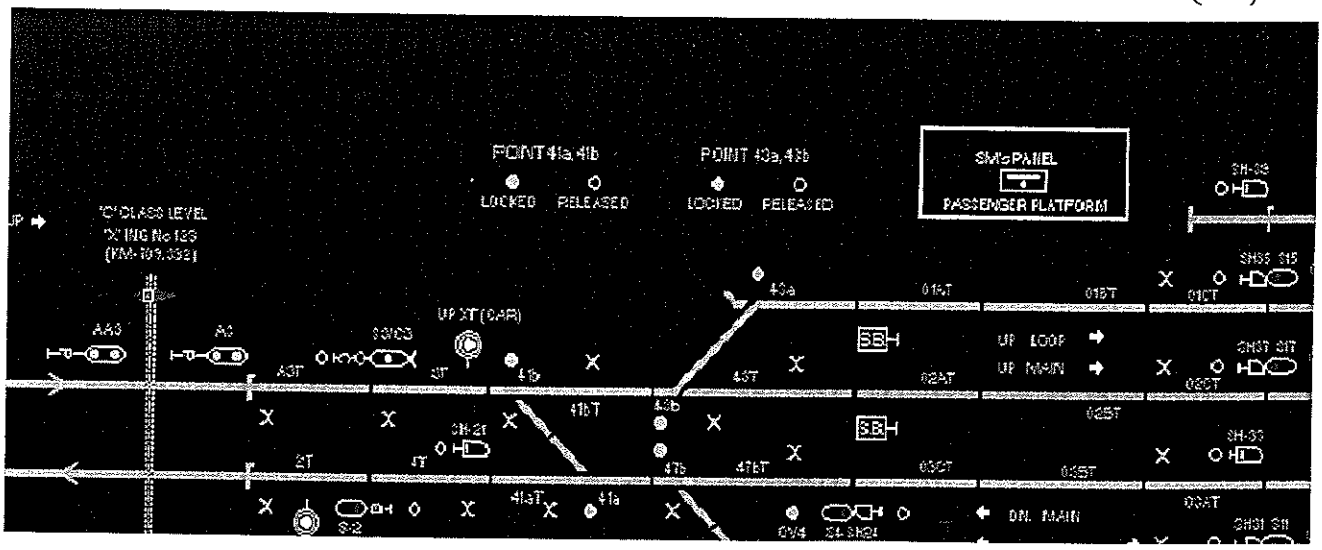


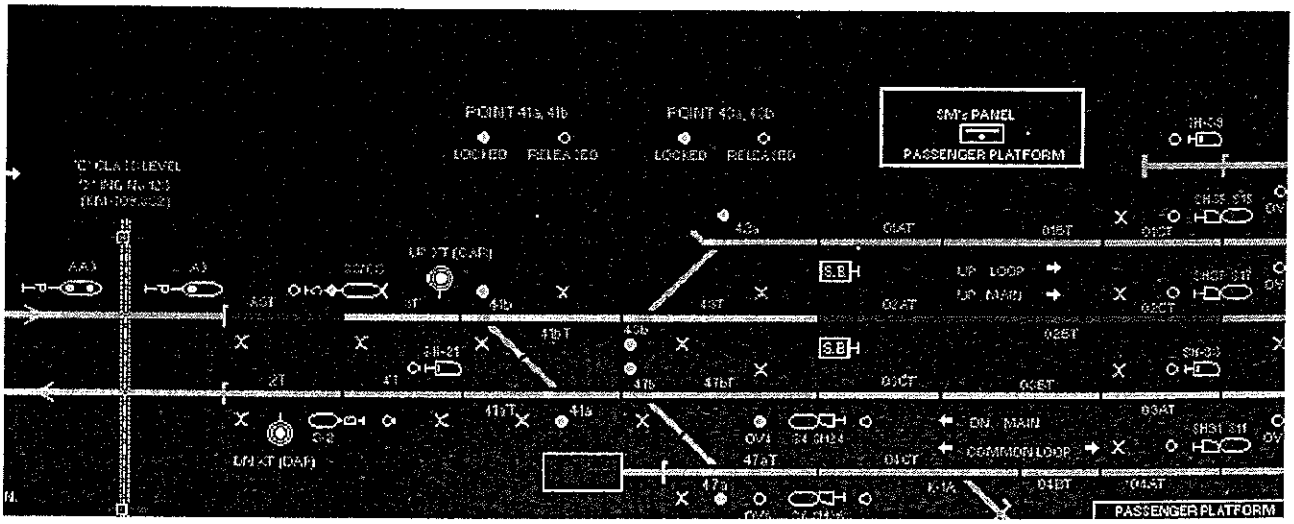
Calling On Signal:-

(ii) Calling on Signal will be cleared only when track circuit failure OR Overlap point (or) both track and point failed (or) Main Signal lamp failed.

(iii) To clear a Calling on, we must have tried the Main Signal first besides the conditions as per point (ii) to be met (in the below case UMTI, UMT2 and UMT3 failed) and the Train to occupy the rear track C3T. In the fig. Below, C3 Signal indication is Yellow and Main Signal is in Red.

(iv) Click on C-3/S-3 signal and all the possible routes for main signal. S-3 and Calling on signal C-3 will be displayed as shown for main signal. Before lowering calling on signal ASM on duty will try for signal S-3-S15.

When C-3-S17 is clicked, main line is to selected. To clear calling on signal, train should occupy, rear track C-3T. Calling on signal will come even if track circuit in route is failed. If the conditions mentioned are not Yellow indication on Calling On signal will start flashing and will be steady after 120 seconds.



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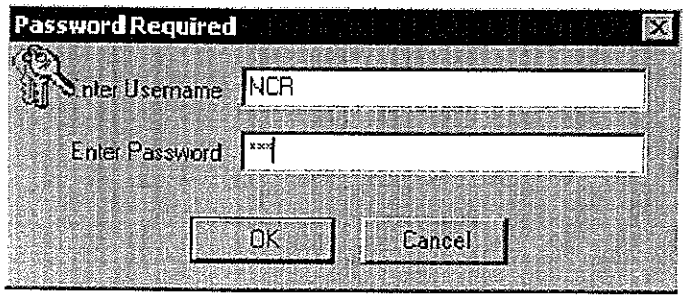
(v) To clear a Calling on, we must have tried the Main Signal first besides the conditions as per point met (in the case UMT1, UMT2, UMT3, failed) and the train to occupy the rear track C3T in the fig. below, C3 Signal indication is Yellow and Main Signal is in red.
Calling on Yellow indication will flash for 120 seconds and will be steady after its COGR picked up and lamp lit at field (COGECR is up)

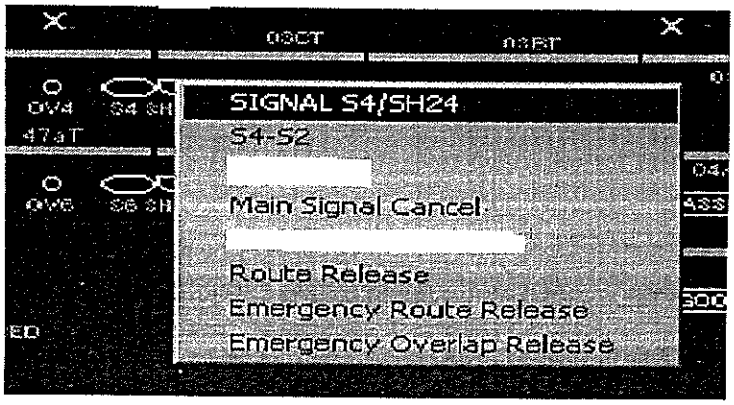
(vi) To cancel the Main Signal cleared, select "Signal Cancel" and that of calling on also, select, "Signal cancel".

(vii) As common button is used in Control cum Indication Panel, here also we provided common "Route Release" for clearing the set Main or calling on route. When route release is applied, the GLKE will flash for 120 seconds and after completion of 120 seconds route release will be affected.

(viii) Emergency Route Cancel [EUYN]: This option is provided in VDU. However, when we click this option, it will ask for USER Name and Password. Each user (ASM) will be provided with separate User name & password. It will not wait for 120 secs time delay. Ie both route and overlap will be released immediately.



3.6 TO CLEAR AND CANCEL STARTER SIGNAL:



When Starter Signals with is there, the pop-menu will appear as shown above. The Signal clear is similar to Main Signal. When route release is applied, the GLKE will flash for 120 seconds and after completion of 120 seconds route release will be affected. In case approach track is not occupied route will be released immediately.

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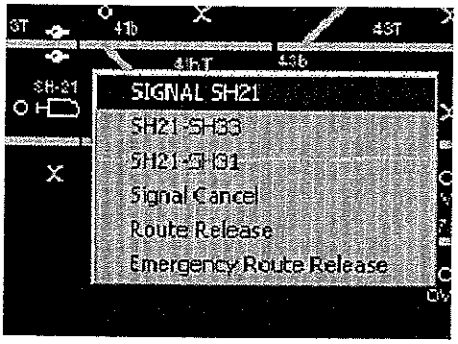
Emergency Route Cancel [EUYN] is similar to that of Main Signal. When Emergency route release is selected, ASM has to input user name and password for the acceptance of operation command.

When we set Main Signal, the overlap point(s) will be locked and will be released after 120 secs of occupying the berthing track.

However when emergency overlap release is applied the following conditions may appear.

1. When the approach tracks of signal are not occupied the overlap will be released immediately.
2. When the approach tracks of signal are occupied by a train or approach tracks have failed, the overlap will be released after 120 seconds.
3. The ASM on duty will ensure that the train has come to stand on the berthing track of signal for which the overlap is to be released.

3.7 **TO CLEAR AND CANCEL SHUNT SIGNAL:**

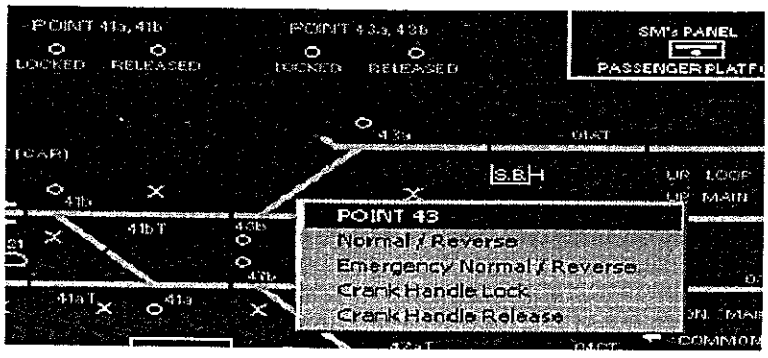


The Shunt 21 is taken here for example. All the menus similar to that of Main Signals and operations are same. When Signal is cleared, the horigentally lit slit will go to 45 degrees and in yellow colour.

When route release is applied, the GLKE will flash for 120 seconds (only if approach track is not clear) and becomes steady. We have to again click "Route Release" to effect the same.

Emergency Route Release is similar to that of Main Signal cancel. When Emergency route release is selected, ASM has to give user name and password.

3.8 **TO OPERATE A POINT & CH RELEASE:**



The Typical Point operations menu is shown here. As common buttons are used (WN + WWN) in Panel for Normal or Reverse operations, in VDU also, the menu is indicated as above. The point in Normal will go to reverse when click "Normal / Reverse" menu and reverse to Normal, when we click the same menu.

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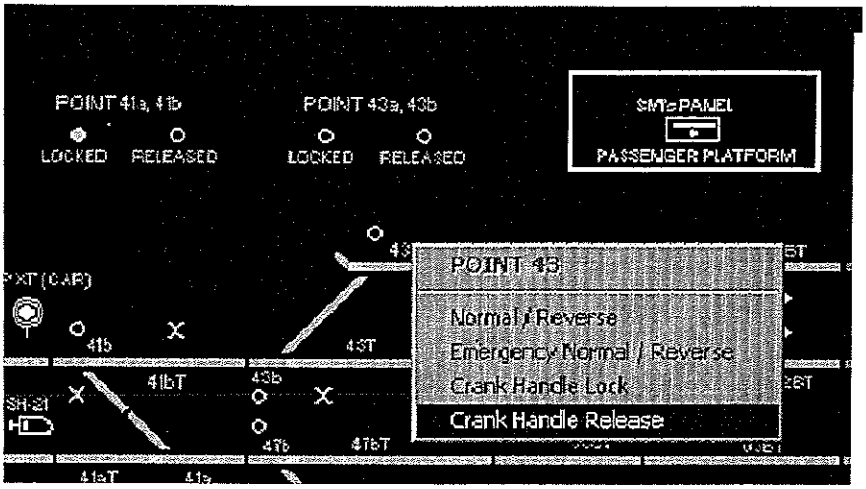
When Emergency Normal / Reverse is selected, ASM / Operator have to input USER NAME and Pass-word, as in the case of Emergency Route Release.

Since there is no separate crank handle release button provided in the conventional Panel, which is releases by pressing concerned WN + GBN (Group Button), we have also provided the CH lock and release menus under Point control itself. In case of crossover, the same menu will appear at "A" end & "B" end as well.

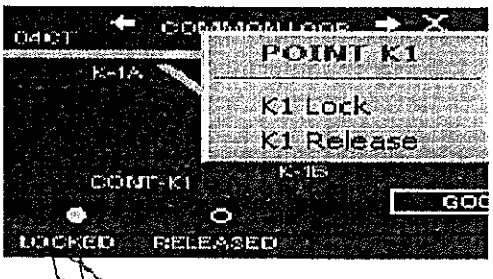


When crank handle key is in then the Locked indication will appear as shown in Point 41a, 41b. If release is applied for taking key at field and once the key is taken out, then the RED indication will appear as shown in Point 43a, 43b.
When we released the CH, the released indication will flash until the key is taken out in the field and will disappear when key is taken out and RED will appear as above.

NOTE:-

1) Before doing emergency route release or emergency point operation or emergency overlap release the ASM on duty personally check the clearance of point zone/route.
2) Although the cancellation of route / point operation or emergency overlap release are being done from VDU, the respective counter provided on panel will step up as in case of cancellation from panel.
3) When the ASM on duty will clear any signal the first route lamp in advance of the signal will start flashing for a predefine time and then become steady. If there is any failure then the signal will not come off, but if every thing is ok then this signal will show off.

3.9 TO LOCK AND RELEASE SIDING POINT:



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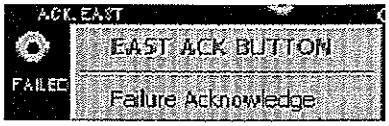
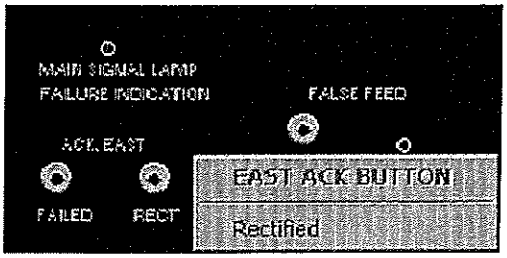
The operations and indications are similar to Crank Handle lock and release operations.

4 MISCELLANEOUS :-

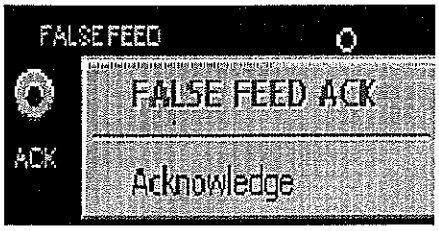
4.1 When MECR failed, to stop the buzzer, click "Failure Acknowledge"



4.2 When failure is rectified, again buzzer comes and to acknowledge that "Rectified" menu is provided as below:



4.3 In case of false feed, a buzzer and RED Indication will come and to stop buzzer, click acknowledgement as shown below:



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APPENDIX 'C'

Anti Collision Device (Raksha Kavach):

NIL

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APPENDIX – 'D'
DUTIES TO BE PERFORMED BY THE STAFF AT AGRA CANTT STATION

1. **STATION MANAGER:**

i) The Station manager shall be responsible for up keep and proper working of station as detailed in chapter-II of G&SR book.

ii) He shall ensure that operating staff working at the station fully conversant and understand the working of station as per station working rules and their assurance is obtained in lieu thereof, in the assurance register to be kept in duplicate.

iii) He shall be responsible for keeping the safety and operating literature including circulars, pamphlets, gazettes etc. up to date and these to be explained to the staff working under him and get noted by them.

iv) He shall be responsible for maintaining accident register and accident chart keeping these up-to-date.

v) He shall investigate any public complaint and send the extracts of the complaint with explanation of the staff and his own remarks to the divisional office.

vi) He shall promptly attend all accidents and assist the relief measure. He shall take notes of all the information available and protect the clues / evidence which may be helpful in the inquiry. He shall feed the control office with necessary information and ask for the required assistance as for relief train, medical van.

vii) He shall ensure that firefighting equipments at the station such as fire extinguishers, fire buckets, electric shock chart etc.are in fine state and ready for use.

viii) He shall ensure that essential equipments at the station are complete and if there is any deficiency, it should be made good without delay.

ix) He shall conduct night and surprise inspections to check the alertness of the staff.

x) He shall supervise the up keep and maintenance of plate form, waiting halls and tea stalls etc.

xi) He shall be responsible and exercise general supervision on Goods traffic halt at AGC.

xii) He shall be responsible to exhibited to duty list outdoor SM & indoor SM in his office as per optg manual.

(A) Dy.SM AT STATION (Outdoor) : -

He shall be responsible for all the outdoor duties as per duty list exhibited in his office the important operating duties to be performed by him are reproduced below:-

i) He shall be responsible for personally attending to and starting of all passenger coming trains from all the platform lines and / or supervising the shunting operations connected with these lines.

ii) He shall be responsible to see correct marshalling of racks, their timely

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placement on the platform lines and removal from sectional coaches of trains.

iii) In case of any unusual occurrence at the station, he must ensure safety report the occurrence and render assistance.

iv) At the time of signal/point failure he will ensure correct setting, clamping and pad locking of the points and issuing authority in case of signal / point failure at RKM/IDH/JNP end.

(B) INDOOR SM :

He shall be responsible for all indoor duties as per the duty list exhibited in the SM's Office. Interalia the important operating duties to be performed by him are reproduced below:-

(a) He shall attend to telephone and Public dealing and maintain coordination with SCORs and Main SM CTL Cabin for the efficient movement of the traffic in the passenger yard.

(b) In the event of late running of trains and consequent clashing thereof, if the train is to be received on or despatched from a line other than that shown in the platform occupation chart, the indoor SM in consultation with Dy. SS shall nominate line to the Main SM under exchange of Pvt. Number.

(c) He shall also be responsible for the correct preparation and issue of Caution to all trains leaving from pass. Yard.

(d) He shall attend to and start a passenger carrying train leaving from UP P/Form No.1 DN only in case the Dy. SS is busy in starting other trains.

(e) He shall ensure correct setting of point when crank handling is to be done due to failure of signals and points in the area.

2. MAIN SM AT CENTRAL CABIN : -

Main SM at Central Cabin will attend telephone and receive instructions from SCOR for granting /obtaining line clear for movement of trains at AGC. He will ensure that the timing of the train arrival / departure are repeated to SCOR. He will instruct the panel /VDU SM (operator) regarding reception and dispatch of train and other shunting moves and give him timely guidance in train passing duties. He will be responsible for general supervision, maitenance of various records /register and other operating documents in the central cabin. Main SM at central cabin shall also be responsible for clamping, padlocking and issuing authorities in case of signal /points failure at JHS end.

(A) PANEL/VDU SM (OPERATOR) : -

i) They will work on the operating panel and will be responsible for the correct operation of route button and concerned signal buttons of panel / and /or the reception and dispatch of train and also for other shunt moves within area of central cabin in instruction from main SM. He will personally verify from the panel that the signaling section and the lines are clear, before setting the route.

ii) The Main SM is attending telephones and recording train Notice and other important message, he will repeat the timing of train arrival/departure to the relevant SCOR with reason for detention if any. When main SM is otherwise

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busy. He will also execute any other work assigned to him by the main SM.

iii) In case of signal/point failures when more than one ASM is required for clamping and padlocking of Points, one of the Panel Operator will be utilized.

iv) At the time of Signal/Point failure he shall be responsible to ensure correct setting, clamping and padlocking of points in the absence of Main SM.

3. CYM (CHIEF YARD MASTER):-

i) The CYM shall be responsible for up keep and proper working of yard.

ii) He shall ensure that operating staff working his under is fully conversent and understand the working goods yard as per station working rules and their assurance is obtained in lieu thereoff, in the assurance register kept in duplicate.

iii) He shall be responsible for keeping the safety and operating literature including circulars, pamphlets, gazettes etc. up to date and these to be explained to the staff working under him and get noted by them.

iv) He should before the morning conference, speak to divisional central office to finalize the forecast and plan the adequate availability of guards of different interchange point for optimum utilization of guards.

v) The CYM should have the position of whole yard. As per directive he shall made conference with Chief controller, Dy. Chief controller and Operating officers.

vi) He will manage AGC HQ Guard position (Booking of Guards, Leave, Rest, LRD, Refresher, Medical, Automatice competency including Mail/Exp./Passenger guards.

vii) He must have liasioning with adjoining divisions for better managent of guards position.

viii) He will co-ordinate with SM/AGC during failure in AGC yard.

ix) He must keep detail position of AC & DSL power detention at AGC yard. Keeping a close watch on PDD & Yard detention, real time terminal detention at AGC yard.

x) Any other work assigned by any operating officers.

4. YARD MASTER:-

4.1 Yard master should have the position of whole yard. As per directives he shall made confrance with Chief controller/ Dy. Chief controller / Area Controller and operating officers.

4.2 The Yard Master shall also be responsible for proper upkeep and maintenance of Safety Matters/circulars, registers, station working rules and train work in record.

4.3 The Yard Master shall issue a cut memo / detail formation of load to shunting staff and Jamadar for siding/placement on line/removal.

4.4 The Yard Master shall inform to shunting staff and on duty SM central cabin for receive a train in the yard and dispatch a train from the yard.

4.5 The Yard Master is fully responsible for shunting in the yard.

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4.6 He shall be responsible for reception, despatch and formation of goods train on the Goods yard and other yard commitments.

4.7 He shall also be responsible for the correct preparation and issue of caution order to all trains leaving from Goods Yard.

4. DUTY OF SHUNTING MASTER :-

4.1 Attend the duty well in time with proper dress.

4.2 Understand the position of the yard form the yardmaster.

4.3 As per instruction of yardmaster do the formation / placement / removal of train.

4.4 Supervise the shunting work.

4.5 Informed to the yard master when observed the defects in the point / signal / line.

4.6 Follow the rules of shunting and ensure safe movement.

4.7 Do not leave the working place before the completing his work.

4.8 Shunting Jamadar shall be responsible for setting and locking the points in required position and hand signals for performing the shunting.

5. POINTSMAN:

5.1 The Points man will clean, will deliver Transportation forms and messages in correct manner under the orders of Station Master on duty.

5.2 The Points man shall assist in shunting operation in safe and efficient manner and carry out all lawful orders passed on to them.

5.3 They will wave-pass the trains from `OFF SIDE' or from any other place so advised by Station Master on duty and shall show all-right signals to train staff if all is right for the train to continue the journey. On observation of any thing abnormal they will immediately show stop hand signal to train staff and also inform the Station Master on duty for further action.

8. GENERAL:

8.1 All station staff must adhere to any lawful duty / responsibility assigned to them from time to time.

8.2 All staff of the Station must appear in proper and neat uniforms when on duty (GR 2.10) and should promptly obey all lawful orders given to them by any official placed in authority over them (GR 2.06).

8.3. The staff will work in conformity with and according to Rosters issued by Divisional Railway Manager, North Central Railway, Agra and posted at the station. General and Subsidiary Rules 2.02, 2.05, 2.06,2.08 and 2.10 shall apply to all staff.

8.4. The Station master on duty at central cabin will not go `OFF' duty until the train for which `Line Clear' has been given or received has cleared the Block Section and line has been closed behind it except when a material train is working in the Block Section or a train that has been disabled in the Block Section or a train which cannot proceed due to impassable obstructions; when instructions contained in SR 14.07/4 shall apply. All the on duty staff will leave his duty after arrival of his reliever.

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APPENDIX – 'E'

ESSENTIAL EQUIPMENTS AT STATION

S.N.	EQUIPMENTS	STATION
01	Detonators	80
02	Button colors	20
03	H.S.Lamps Tri coloures	12
04	Green flags	12
05	Red flags	12
06	Safety chains	06
07	Switch clamps	12
08	Pad locks	20
09	Wooden badges	24
10	Fire extinguisher	06
11	Fire buckets with stand	06
12	First Aid Box	01
13	Stretcher	01

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APPENDIX – 'F'

RULES FOR WORKING OF DK STATIONS, HALTS, IBH, IBS & OUT LYING SIDINGS

(NOT APPLICABLE)

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APPENDIX - `G

Rules for working of trains in electrified section:-

This appendix Will be prepared by Sr.DEE/TRD/office of AGC division

This appendix pertaining to AC traction working, has been issued separately, by Sr.DEE(TRD)/Agra division, to be treated as the part of SWR/AGC- AGRA/01. Station staff to follow the rules mentioned, therein strictly.

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NORTH CENTRAL RAILWAY
AGRA DIVISION

APPENDIX 'H-1' TO SWR OF AGC

A RULES FOR WORKING OF TRAINS BETWEEN AGRA CANTT AND RAJA KI MANDI AUTOMATIC SIGNALLING SECTION

1. Attached is a working Rule diagram of Automatic signalling section (AGC-RKM) AGC station SWRD No. A-121/R Dated 05.07.23. In all cases of reference, the number of lines, signals and the section between automatic signals etc. as shown therein must be quoted.

2. The trains between AGC-RKM are worked under 'Automatic Block System' (Chapter IX of the General and Subsidiary Rules).

3. Two 2 position selection switches are provided at both AGC and RKM stations one each for Up and Dn line. One position of these switches is Auto Mode and the other position is MODIFIED AUTOMATIC SIGNALLING Mode. Auto Mode Correspond to Normal automatic signaling while MODIFIED AUTOMATIC SIGNALLING Mode corresponds to Automatic Signalling for visibility impaired condition like fog. The switches shall remain in same position at both the adjoining station. Normally these switches will be kept in Auto Mode position and in this position Automatic Signaling will work normally. When the switch is changed to MODIFIED AUTOMATIC SIGNALLING Mode, Automatic Signalling for visibility impaired condition like fog will be introduced on the section.

4. Both Up and Down main lines between AGC and RKM are continuously track circuited throughout the length.

4.1 The automatic signaling section on Down line between AGC and RKM is governed by semi automatic signal 98 (DN ADV.AGC), semi automatic signal 2 (DN HOME RKM) and automatic signals S134505.

4.2 The automatic signaling sections on up line between RKM and AGC is governed by Semi Automatic signal 3(UP STR RKM) and semi automatic UP home signal 99 (AGC) and automatic signals S134508.

4.3 There is no mid section modified semi-automatic signal.

4.4 When the selection Switches are in MABS (Modified Automatic Block Signalling) Mode position, UP Main line will be divided into ONE signaling section i.e. from Signal 3 (RKM) (Semiautomatic UP Starter Signal of RKM) to Semiautomatic Signal to Semiautomatic Signal S99 (UP Home Signal of AGC) with adequate distance on Up line. Similarly, Down line will also be divided into ONE signaling sections i.e. from Semi automatic Signal 98(AGC) (DN Semiautomatic Advance Starter Signal of AGC) to Semi automatic Signal 02 (DN Home Signal of RKM) with adequate distance on DN line. All other automatic signals available in section will display aspects as per aspects displayed by Signal ahead.

5. The movement of trains in the established direction of traffic into automatic signalling section is controlled by automatic signals which are operated automatically by the passage of the trains past the signals. The Automatic signal shall not assume 'OFF' aspect unless the line is clear not only upto the

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next automatic signal in advance, but also for an adequate distance beyond it. The signal is automatically placed to 'ON' as soon as it is passed by the train.

6. **MOVEMENT OF TRAINS AGAINST THE PRESCRIBED DIRECTION OF TRAFFIC OF THE AUTOMATIC BLOCK SYSTEM:**
In Automatic signaling territory between AGC and RKM, train shall run in the prescribed direction of traffic only. Movement of trains whenever in an emergency it becomes unavoidable necessary to move a train against the established direction of traffic, this shall be done only after Station Master at both the ends have ensured that the line behind the said train upto the station in rear is clear and free from obstructions (GR 9.13). The Station Master on duty, before permitting movement against the established direction of movement in an emergency, shall take action in accordance with the procedures as laid down in SR. 6.09/2 (d) of the General and Subsidiary Rules Book.

7. The Semi automatic/Automatic signals have four aspects, danger, caution, attention and clear. The condition under which the automatic signals assume various aspects are as under:-
(a) Caution: When one automatic signalling section and overlap ahead of the signal is clear.
(b) Attention: When two automatic signalling sections and overlap ahead of the signal are clear.
(c) Clear: When at least 3 Automatic signalling sections ahead of the signal are clear.

8.0 **Change of working from Automatic to MODIFIED AUTOMATIC SIGNALLING mode (visibility impaired condition like Fog) GR 9.01(3)(a)**

The change of Selection switch from one position to other position will be done only after getting instructions from control. On getting instructions from control, both station master will talk to each other and after exchanging private numbers will operate the switch from Auto Mode to MODIFIED AUTOMATIC SIGNALLING Mode. Care should be taken that while introducing Modified Automatic Signalling the concerned signals are at 'ON.This action will be done at both stations simultaneously separately for UP and DN line. This action will result in extinguishing of 'A' marker (& also AG marker where provided) of S-3(RKM) ,S2(RKM) at RKM & S98(AGC), S99(AGC) at AGC on AGC -RKM Section.Under this condition Automatic Signalling for visibility impaired condition like fog will come in force. The normal working will be reintroduced after getting instructions from control, exchange of private numbers and turning the switches back to Auto Mode in the similar manner as described above. For introduction and cancellation of modified automatic signalling, a separate register will be maintained at station by the SM.

9. **Entry of trains in RKM and AGC Block Section**

9.1 **When the Switch for UP line (RKM-AGC Section) is in Auto Mode Position:**
The entry of Up trains in Automatic signalling territory in Up direction is controlled by Semi Automatic Up starter signal 1 of RKM. The Signal is provided with illuminated "A". The 'A' marker gets lit up as soon as the SM converts it to Auto mode from LCP. This signal shall assume 'OFF' aspect only when the automatic signalling section ahead of this signal is clear not only up to

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Automatic signal S134508, but also for an adequate distance beyond it. Further movement of the train shall be controlled by the aspect of signals ahead depending upon the actual position of the track (occupied or clear).

9.2 When the Switch for UP line (RKM – AGC Section) is in MODIFIED AUTOMATIC SIGNALLING Mode Position:

The entry of UP trains in Automatic signalling territory in UP direction is controlled by STR signal (semi-automatic signal) No. 1 (RKM). The Signal is provided with an illuminated 'A' marker(as well as "AG" marker if available).. The 'A' marker(as well as "AG" marker if available) will remain extinguished even if SM/RKM converts it to auto mode from the LCP. This signal shall assume `OFF' aspect only when the section ahead of this signal is clear not only up-to semi-automatic signal No S99 (UP home AGC) but also for an adequate distance beyond it.

9.3 When the switch for DN line (AGC-RKM) Section is in Auto Mode Position:

The entry of DN trains in Automatic signalling territory in DN direction is controlled by last stop signal (semi-automatic signal) No. S98 of AGC. The Signal is provided with illuminated 'A' marker("AG" Marker if available). The 'A' marker gets lit up as soon as SM/ AGC converts it to auto mode from the LCP. This signal shall assume `OFF' aspect only when the automatic signalling section ahead of this signal is clear not only up to Automatic signal No S134505 but also for an adequate distance beyond it. Further movement of the train shall be controlled by the aspect of signals ahead depending upon the actual position of the track (occupied or clear).
The process of taking 'Off' Advance Starter signal need not be repeated for every train. Facility however exists to work the Advance Starter signal as manual signal as and when considered necessary by the Station Master.

9.4 When the switch for DN line (AGC-RKM) Section is in ABS (MODIFIED AUTOMATIC SIGNALLING) Mode Position:

The entry of DN trains in Automatic signalling territory in DN direction is controlled by last stop signal (semi-automatic signal) No. S98 of AGC. The Signal is provided with illuminated 'A' marker ("AG" Marker if available). The 'A' marker("AG" Marker if available) will remain extinguished even if SM/ AGC converts it to auto mode from the LCP. This signal shall assume `OFF' aspect only when the automatic signalling section ahead of this signal is clear not only up to semi Automatic signal No S2(RKM) but also for an adequate distance beyond it. 'A' marker ("AG" Marker if available) will remain extinguished.

10. The entry of trains into the station yard is controlled by the Home signal of the station concerned. Detailed procedures and rules for taking off the concerned Home signal are given in the Station Working Rules of RKM and AGC stations. Home and starter signal will be worked as manual signals only during the period the selection switches at stations are in MODIFIED AUTOMATIC SIGNALLING Mode position.

11. Direct Telephonic communication has been provided between SM / RKM and SM / AGC. As soon as an up train enters Automatic signaling section ahead of semi-automatic signal No. 3 of RKM, the SM RKM shall advise the SM on duty

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at AGC under exchange of private number, the number and the description of the train entered in automatic section. Similarly, the SM / AGC on duty shall advice the SM / RKM immediately after a Down train has passed his Down Advanced starter signal (a semi-automatic signal) and has entered the Automatic signalling section under exchange of private number, the number and description of the train entered in the automatic Section.

12. WORKING OF TRAINS BETWEEN AGC-RKM AUTOMATIC SECTION:

12.1 When the switches for AGC-RKM section correspond to Auto Mode position:

Automatic signaling section between **AGC-RKM** extends on:-

(i) ON UP LINE: From UP Semi-Automatic Starter signal No. 3 (RKM) of RKM to UP automatic Signal S134508 & UP automatic Signal S134508 to Semi-Automatic UP Home Signal No. S-99(AGC) of AGC.

(ii) ON DOWN LINE: From Down Semi-Automatic Advanced Starter Signal No. 98(AGC) of AGC to DN automatic Signal S134505 & DN automatic Signal S134505 to Semi-Automatic Down Home Signal No.2 of RKM.

(iii) SM / AGC and SM / RKM are controlling agencies for Automatic section between AGC-RKM

12.1.1 ON UP LINE:

Following signal is provided between RKM and AGC

(i) **Signal No. 3 (RKM):**

Semi-automatic Up starter signal fitted with `A' (letter "A" white illuminated on black back ground) (&"AG" Marker if available) which gets white illuminated and the signal starts working in automatic mode as soon as it is converted to auto mode.

(ii) **Signals S134508:**

Signals **S134508** is Automatic Signals fitted with a disc painted white with letter "A" in black. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Semi Automatic Signal (S99 –UP home Signal AGC) and adequate distance beyond is clear of vehicles.

12.1.2 ON DOWN LINE

Following Signals are provided between AGC and RKM

(i) Signal No. 98 (AGC):

Semi-automatic Down advanced starter signal fitted with `A' marker (letter "A" white illuminated on black back ground) .which gets white illuminated and the signal starts working in automatic mode as soon as it is converted to auto mode.

(ii) **Signals S134505:**

Signals **S134505** is Automatic Signals fitted with a disc painted white with letter "A" in black. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Semi

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Automatic Signal (S2 –DN home Signal RKM) and adequate distance beyond is clear of vehicles.

13.2 *WORKING OF TRAINS BETWEEN AGC-RKM AUTOMATIC SECTION:*

When the switches for AGC-RKM section correspond to ABS (MODIFIED AUTOMATIC SIGNALLING) Mode position: GR 9.01(3)(b), (c) &(d)

Signalling section between AGC and RKM extends on:-

(i) **ON UP LINE**: From Up Semi Automatic Starter signal No. 3 (RKM) of RKM to Semi-Automatic UP home Signal S99(AGC) of AGC .

(ii) **ON DOWN LINE:** From Down Semi Automatic Advanced Starter Signal No. 98 (AGC) of AGC up-to Semi-Automatic Signal Down Home Signal of No.2 of RKM.

(iii) SM / AGC and SM / RKM are controlling agencies for Automatic section between AGC and RKM.

13.3 UP Home Signal 99 of AGC is manually controlled Semi Automatic Signal operated from VDU/Panel available with SM at AGC. Similarly, Down Home Signal S2 of RKM is manually controlled Semi Automatic Signal operated from operating VDU/Panel available with SM at RKM

13.4 All the signals while working as automatic/Semi automatic Signal with A/AG marker lit up normally display Green aspect and change their aspects automatically by the passage of train. As soon as a train passes ahead of an automatic signal, the signal changes its aspect to "RED" other signals in rear of this signal display aspect following sequence of four aspect signaling i.e. Red followed by yellow, yellow followed by Double Yellow and Double Yellow followed by Green.

13.5 (i) The Up Starter Signal No. 3 (RKM) of RKM is controlled from the VDU/Panel of RKM and function as Automatic Signal when the signal is converted as auto signal by "AUTO ON" mode selection by SM/RKM When the switch for RKM-AGC section (UP line) is in Auto Mode condition, S-1 will assume off aspect when track section up to Automatic Signal S134508 and adequate distance beyond it, is clear. When the switch for RKM-AGC section is in MODIFIED AUTOMATIC SIGNALLING Mode condition, S-3(RKM) will assume off aspect when track section up to S99 (AGC) and adequate distance beyond it is clear The process of taking 'Off' Starter signal need not be repeated for every train. Facility however exists to work the Starter signal as manual signal as and when considered necessary by the Station Master.

(ii) The Down Advanced Starter Signal No.98(AGC) of AGC is controlled from the VDU/Panel of SM/AGC and functions as Automatic Signal as soon as by AUTO ON" mode selection by SM/AGC. When the switch for AGC-RKM section (DN line) is in Auto Mode condition, S- 98(AGC) will assume off aspect when track section up to Automatic Signal S134505 and adequate distance beyond it, is clear. When the switch for AGC-RKM section is in MODIFIED AUTOMATIC SIGNALLING Mode condition, S-98 will assume off aspect when track section up to S2(RKM) and adequate distance beyond it, is clear. The process of taking

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'Off' Advance Starter signal need not be repeated for every train. Facility however exists to work the Advance Starter signal as manual signal as and when considered necessary by the Station Master.

13.6 TRACK CIRCUITS IN AUTOMATIC SECTION:

The track circuits in Automatic Section towards **RKM** are as under:

(i) UP LINE:- (98T,98AT,98BT,98CT)/98XT, (134505T, 134505AT, 134505BT, 134505CT, 134505DT,2T) /134505XT.

(ii) DOWN LINE: (3T/3XT,3AT/3AXT),(3BT,3CT,3DT)/3XT, (134508T, 134508AT, 134508BT, 134508CT, 134508DT,99T) /134508XT.

(iii)

13.7 INDICATIONS WITH REGARD TO AUTOMATIC SECTIONS ON AGC PANEL/VDU TOWARDS RKM:

COMMON indication of Signal No's

(i) UP LINE : S144508
(ii) DOWN LINE : S144505

Occupied / clear Common indications of track circuit No's

UPLINE:,(98T,98AT,98BT,98CT)/98XT, (134505T, 134505AT, 134505BT, 134505CT, 134505DT,2T) /134505XT.

DOWNLINE:(3T/3XT,3AT/3AXT),(3BT,3CT,3DT)/3XT, (134508T, 134508AT, 134508BT, 134508CT, 134508DT,99T) /134508XT

14 SIGNAL FAILURES IN AUTOMATIC SECTION:

In case of failure of signals trains shall be worked as per instructions laid under G & SR 3.73, 9.02, 9.12, 9.14 & 9.15 as the case may be. Failure of any signal in this territory shall be reported as per G & SR 9.11. Any failure of track circuits which results in failure of signals in respective jurisdiction of RKM and AGC will be entered into Signal Failure Register.

15.0 Failures when Modified Automatic Signalling for visibility impaired condition like fog is in force

(a) Failure of Advanced Starter:

When 'A' marker is extinguished, and the Starter Signal no S-3 of RKM and the Advance Starter Signal no S-98 of AGC has failed, the SM shall issue written authority T369(3b), dlspensing with endorsement of private number ,to the Loco Pilot to pass the signal at 'On' after ensuring that the last preceding train has passed Home Signal of advance station and adequate distance beyond it.

If the clearance of section between Advanced starter signal and Home Signal of advance station cannot be ascertained by the dispatching Station Master, he will talk to the Station Master of the receiving station and after confirming under exchange of private numbers that the last preceding train has arrived complete at the station ahead, he will authorize the Loco Pilot on T369(3b) to pass the defective Advanced starter signal in 'On' position. In both the above cases, the Loco Pilot shall proceed at a speed not exceeding 10 KMPH till the foot of the next automatic signal and there after be guided by the aspect of this signal observing GR9.02 and SR3.61/2(a).

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b. Failure of Fog Switch : If by operation of Fog Switch , 'A' marker on Starter/advance starter signal of RKM and AGC station & Home signal of RKM & AGC does not get extinguished, the fog signaling system shall be treated as failed in between the AGC and RKM stations in UP/DN direction respectively as the case may be. The SM concerned will extinguish the 'A' marker of Advanced Starter Signal and Home signal by means of facility available on the VDU/PANEL to convert these signals in manual mode. Moreover, the modified automatic signaling system between AGC and RKM stations may fail any time due to any reason after the same has been introduced and working successfully for some time. In both the cases above, the SM of the train dispatching station of the affected section will not dispatch a train in the section until the last preceding train has arrived complete at the receiving station, which shall be confirmed by the exchange of private numbers between the Station Masters of RKM and AGC.

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APPENDIX `H-2' TO SWR OF AGC

NORTH CENTRAL RAILWAY
AGRA DIVISION
APPENDIX `H-1' TO SWR OF AGRA CANT.

RULES FOR WORKING OF TRAINS BETWEEN BAAD-FARAH AUTOMATIC SIGNALLING SECTION

1.0 Attached is a working Rule diagram of Automatic signalling section between **AGC-BHA** Station No. SWRD.NCR.AGC.AGC-BHA.01 dated ..15.06.2023. .In all cases of reference, the number of lines, signals and the section between automatic signals etc. as shown there in must be quoted.

2.0 The trains between **AGC** and **BHA** are worked under `Automatic Block System' (Chapter IX of the General and Subsidiary Rules).

3.0 Two 2 position selection switches are provided at both **AGC** and **BHA** stations on Auto block VDU, one each for up and down line. One position of these switches is Auto Mode and the other position is MABS (Modified Automatic Block Signalling) Mode. Auto Mode corresponds to normal automatic signalling while MABS (Modified Automatic Block Signalling) Mode corresponds to Automatic Signalling for visibility impaired conditions like Fog. The switches shall remain in same position at both the adjoining stations. Normally, these switches will be kept in Auto Mode position and in this position Automatic Signalling will work normally. When the position for these switches is changed to MABS (Modified Automatic Block Signalling) Mode, Automatic Signalling for visibility impaired condition like fog will be introduced in the section.

4.0 Both Up and Down main lines between **AGC** and **BHA** are continuously track circuited through out the length. Down main line is divided into various automatic signalling sections and Up main line is also divided into various automatic signalling sections. Each of the automatic signalling section is governed by an automatic signal.

4.1 The automatic signalling sections on UP line between **AGC** and **BHA** are governed by UP Semi Automatic Advance Starter Signal 3 of AGC and automatic signals A513, A515, A517, A519 and A521.

4.2 The automatic signalling sections on Down line between **BHA** and **AGC** are governed by DN Semi Automatic Advance Starter Signal 35 and automatic signals A510,A508, A506,A504 and A502.

4.3 Signals A517 on Up line and Signal A506 on Down line have been made as Mid section Modified Semi Automatic Stop Signals in accordance with GR3.12 (1) (ba) by providing "A" marker.

4.4 When the selection Switches are in MABS (Modified Automatic Block Signalling) Mode position, UP Main line will be divided into two signaling sections i.e. from Signal 3 (AGC) (Semiautomatic UP Advance Starter Signal of AGC) to Semiautomatic Signal A517 (FOG Signal) with adequate distance and from Semiautomatic Signal A517 to Signal 2 (UP Home Signal of BHA) with adequate distance on Up line. Similarly, Down line will also be divided into two signalling sections i.e. from Signal 35 (BHA) (DN Semiautomatic Advance Starter Signal of BHA) to Semiautomatic Signal A506(FOG Signal) with adequate distance and from

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Semiautomatic Signal A506 to Signal 02 (DN Home Signal of AGC) with adequate distance on DN line.

All other automatic signals available in section will display aspects as per aspects displayed by Signal ahead.

5.0 The movement of trains in the established direction of traffic into automatic signalling section is controlled by automatic signals which are operated automatically by the passage of the trains past the signals. The Automatic signal shall not assume `OFF' aspect unless the line is clear not only up to the next automatic signal in advance, but also for an adequate distance beyond it. The signal is automatically placed to `ON' as soon as it is passed by the train.

6.0 **MOVEMENT OF TRAINS AGAINST THE PRESCRIBED DIRECTION OF TRAFFIC OF THE AUTOMATIC BLOCK SYSTEM**:

In Automatic signaling territory between **AGC** and **BHA** ,train shall run in the prescribed direction of traffic only. Movement of trains whenever in an emergency it becomes unavoidable necessary to move a train against the established direction of traffic, this shall be done only after Station Master at both the ends have ensured that the line behind the said train up to the station in rear is clear and free from obstructions (GR 9.13/1). The Station Master on duty, before permitting movement against the established direction of movement in an emergency, shall take action in accordance with the procedures as laid down in SR. 9.13/1 of the General and Subsidiary Rules Book.

7.0 The Semi automatic/Automatic signals have four aspects, danger, caution, attention and clear. The condition under which the automatic signals assume various aspects are as under:-

(a) Danger: When Automatic Signal ahead is occupied by a train/vehicle.

(b) Caution: When one automatic signalling section and overlap ahead of the signal is clear.

(c) Attention: When two automatic signalling sections and overlap ahead of the signal are clear.

(d) Clear: When at least 3 Automatic signalling sections ahead of the signal are clear.

8.0 CHANGE OF WORKING FROM AUTOMATIC TO MABS (MODIFIED AUTOMATIC SIGNALING) MODE (VISIBILITY IMPAIRED CONDITION LIKE FOG), GR 9.01(3) (a):

The change of Selection switch from one position to other position will be done only after getting instructions from control. On getting instructions from control, both station master will talk to each other and after exchanging private numbers will operate the switch from Auto Mode to (MODIFIED AUTOMATIC SIGNALLING) Mode. **Care should be taken that while introducing Modified Automatic Signalling the concerned signals are at 'ON.** This action will be done at both stations simultaneously separately for UP and DN line. This action will extinguishing 'A' marker (and also 'AG' marker, if provided) of UP Advanced Starter Signal 3 of AGC , Down Advanced Starter Signal 35 of BHA and semiautomatic signals A517 and A506 available in block section. Under this condition Automatic Signalling for visibility impaired condition like fog will come in force. The normal working will be reintroduced after getting instructions from control, exchange of private numbers and turning the switches back to Auto Mode in the similar manner as described

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above. **For introduction and cancellation of modified automatic signalling, a separate register will be maintained at station by the SM.**

9.0 **ENTRY OF TRAINS IN AGC-BHA SECTION:**

9.1 **When the Switch for UP line (AGC and BHA) Section is in Auto Mode Position:**

The entry of UP trains in Automatic signalling territory in UP direction is controlled by Semi Automatic UP Advanced starter signal 3 of **AGC**. The Signal is provided with illuminated "A" & "AG" marker. The 'A' marker gets lit up as soon as the SM converts it to Auto mode from LCP. This signal shall assume `OFF' aspect only when the automatic signalling section ahead of this signal is clear not only up to Automatic signal A513, but also for an adequate distance beyond it . Further movement of the train shall be controlled by the aspect of signals ahead depending upon the actual position of the track (occupied or clear).

9.2 **When the Switch for Up line (AGC and BHA) Section is in MABS (Modified Automatic Block Signalling) Mode Position:**

The entry of UP trains in Automatic signalling territory in UP direction is controlled by last stop signal (Semi Automatic Signal) 3 of AGC. The Signal is provided with an illuminated "A" & "AG" marker. The 'A' marker (and also 'AG' marker, if provided) will remain extinguished even if **SM/AGC** converts it to auto mode from the LCP. This signal shall assume `OFF' aspect only when the section ahead of this signal is clear not only up to mid section Semi Automatic signal A517 but also for an adequate distance beyond it and Level Crossing L.C.493 & 494 are closed & locked against road traffic .

9.3 **When the switch for Down line (BHA and AGC)Section is in Auto Mode Position:**

The entry of DN trains in Automatic signalling territory in DN direction is controlled by Semi Automatic DN Advanced starter signal 35 of **BHA**. The Signal is provided with illuminated "A" (and also 'AG' marker, if provided). The 'A' marker gets lit up as soon as the SM converts it to Auto mode from LCP. This signal shall assume `OFF' aspect only when the automatic signalling section ahead of this signal is clear not only up to Automatic signal A510, but also for an adequate distance beyond it . Further movement of the train shall be controlled by the aspect of signals ahead depending upon the actual position of the track (occupied or clear).

9.4 **When the switch for Down line (BHA and AGC) Section is in MABS (Modified Automatic Block Signalling) Mode Position:**

The entry of DN trains in Automatic signalling territory in DN direction is controlled by Semi Automatic DN Advanced starter signal 35 of **BHA**. The Signal is provided with illuminated "A" (and also 'AG' marker, if provided). The 'A' marker (and also 'AG' marker, if provided) will remain extinguished even if SM/**BHA** converts it to auto mode from the LCP. This signal shall assume `OFF' aspect only when the section ahead of this signal is clear not only up to mid section Semi Automatic signal A506 but also for an adequate distance beyond it and Level Crossing 489 is

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closed & locked against road traffic A' marker (and also 'AG' marker, if provided) will remain extinguished .

10.0 The entry of trains into the station yard is controlled by the Home signal of the station concerned. Detailed procedures and rules for taking off the concerned Home signal are given in the Station Working Rules of **AGC and BHA** stations. Home and starter signal will be worked as manual signals only during the period the selection switches at stations are in MABS (Modified Automatic Block Signalling) Mode position.

11.0 Direct Telephonic communication has been provided between SM / AGC and SM / BHA . As soon as down train enters Automatic signalling section ahead of semi-automatic signal **35 of BHA, SM / BHA** shall advise the SM on duty at **AGC** under exchange of private number, the number and the description of the train entered in automatic section. Similarly, the **SM / AGC** on duty shall advice the **SM / BHA** immediately after an UP train has passed his Up Advanced starter signal 3 (Semi Automatic Signal) and has entered the Automatic signalling section under exchange of private number, the number and description of the train entered in the automatic Section.

12.0 Telephone sets are also provided at Signal Posts of Semi automatic Signals A506 on down line and A517 on up line. Loco Pilot can talk to SM / AGC (receiving end) using the phone available at signal post of A506 and to SM / BHA(receiving end) using the telephone provided at signal post of Signal A517. These phones are to be used in case these Semi-automatic signals A506 / A517 fails to assume 'OFF' aspect and their 'A' Marker (and also 'AG' Marker if provided) are also in extinguished state under Modified Automatic Block Signalling for visibility impaired condition like fog i.e. when selection switches are in MABS (Modified Automatic Block Signalling) Mode position or after waiting 5 minutes during clear weather when these signals do not assume 'OFF' aspect as well as 'A' and 'AG' Marker (if provided) are extinguished.

13.0 **WORKING OF TRAINS BETWEEN AGC and BHA AUTOMATIC SECTION:**

13.1 When the switches for AGC-BHA section corresponds to Auto mode position. Automatic signalling section between **AGC and BHA** extends on:

(i) **ON DOWN LINE:** From Down Semi Automatic Advanced Starter Signal 35 of BHA to Down Home Signal 2 of AGC.

(ii) **ON UP LINE**: From UP Semi Automatic Advanced Starter signal 3 of AGC to UP Home Signal 2 of BHA.

(iii) SM / AGC and SM / BHA are controlling agencies for Automatic section between AGC- and BHA.

(iv) All signals in automatic signalling section are 4 aspect colour light signals.

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13.1.1 **ON UP LINE**:

Following signals are provided between **AGC and BHA**:

(i) **Signal 3 (AGC):**

Semi-automatic Up advanced starter signal fitted with illuminated "A" & "AG" marker (letter "A" & "AG" white illuminated on black back ground) ."A" marker gets white illuminated and the signal starts working in automatic mode as soon as it is converted to Auto mode.

(ii) **Signals A513, A515, A517, A519 and A521:**

Except signals A517and A513 all are Automatic Signals fitted with a disc painted white with letter "A" in black. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.

Signal A513 is Semi automatic signals provided with a "G" marker disc painted Yellow with letter "G" in black and illuminated "A" Marker light protecting LX 493 . "A" light is lit as soon as the gate is closed and locked. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles .

In case of gate failure (when 'A' marker light is extinguished) the driver passes the signal by "G" marker observing the gate rules as per GR 9.15(b). In case of track circuit failure, if the gate is closed, "A" light is lit and the driver need not follow the gate rules.

A517 is **Mid-section Semi-automatic signal** provided with illuminated "A" marker. While working in auto mode, A marker will lit up, This signal display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles. Under the condition when A marker is extinguished, Driver can pass the signal when either the signal assumes off aspect or as per instructions for passing of this signal in failed condition.

3.1.2 **ON DOWN LINE**

Following Signals are provided between **BHA and AGC**:

(i) **Signal 35 (BHA):**

Semi-automatic Up advanced starter signal fitted with illuminated "A" & "AG" marker (letter "A" & "AG" white illuminated on black back ground) ."A" marker gets white illuminated and the signal starts working in automatic mode as soon as it is converted to Auto mode.

(ii) **Signals A510,A508, A506,A504 and A502:**

Except signals A506 and A504, all are Automatic Signals fitted with a disc painted white with letter "A" in black. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.

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Signal A504 is Semi automatic signals provided with a "G" marker disc painted Yellow with letter "G" in black and illuminated "A" Marker light protecting LX 493 . "A" light is lit as soon as the gate is closed and locked. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles .

In case of gate failure (when 'A' marker light is extinguished) the driver passes the signal by "G" marker observing the gate rules as per GR 9.15(b). In case of track circuit failure, if the gate is closed, "A" light is lit and the driver need not follow the gate rules.

A506 is **Mid-section Semi-automatic signal** provided with illuminated "A" marker .While working in auto mode, A marker will lit up. This signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.
Under the condition when A marker is extinguished, Driver can pass the signal when either the signal assumes off aspect or as per instructions for passing of this signal in failed condition.

13.2 **When the switches for AGC-BHA section correspond to MABS (Modified Automatic Block Signalling) Mode position, GR 9.01(3) (b), (c) & (d). Automatic signalling section between AGC and BHA extends on**:

(i) **ON UP LINE**: From Up Semi Automatic Advanced Starter signal 3 of AGC to mid section modified semi automatic signal A517 with an adequate distance and from semi automatic Signal A517 to UP Home Signal 2 of BHA with an adequate distance.

(ii) **ON DOWN LINE**: From Down Semi Automatic Advanced Starter Signal 35 of BHA to mid section modified semi automatic signal A506 with an adequate distance and from Signal A506 to Down Home Signal 2 of AGC with an adequate distance.

(iii) SM / AGC and SM / BHA are controlling agencies for Automatic section between AGC and BHA

(iv) All signals in automatic signalling section are 4 aspect colour light signals.

13.2.1 **ON UP LINE**

(i) **Signal No. 3 (AGC):**
Semi-automatic Up advanced starter signal fitted with illuminated "A" & "AG" marker (letter "A" & "AG" white illuminated on black back ground) which remains extinguished even when the signal starts working in automatic mode.

(ii) **Signals A513, A515, A517, A519 and A521:**
Except signals A509,A507 and A503, all are Automatic Signals fitted with a disc painted white with letter "A" in black. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.

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Signal A513 is Semi automatic signals provided with a "G" marker disc painted Yellow with letter "G" in black and illuminated "A" Marker light protecting LX 493. "A" light is lit as soon as the gate is closed and locked. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.

In case of gate failure (when 'A' marker light is extinguished) the driver passes the signal by "G" marker observing the gate rules as per GR 9.15(b). In case of track circuit failure, if the gate is closed, "A" light is lit and the driver need not follow the gate rules.

A517 is **Mid section modified Semi automatic signal provided with illuminated "A" marker. While working in auto mode this signal will display the aspect depending on the clearance of section ahead and aspects displayed by signal. Under the condition, when "A" marker is extinguished, Loco Pilot can pass the signal when either the signal assumes off aspect or as per instructions for passing of this signal in failed condition. (GR 3.12 (1) (ba).**

(iii) Thus under this working, there can be only one train on either side of Signal A-517.

13.2.2 <u>ON DN LINE</u>

Following Signals are provided between **BHA and AGC**:

(i) **<u>Signal 35 (BHA):</u>**

Semi-automatic Up advanced starter signal fitted with illuminated "A" & "AG" marker (letter "A" & "AG" white illuminated on black back ground) ."A" marker gets white illuminated and the signal starts working in automatic mode as soon as it is converted to Auto mode.

(ii) **<u>Signals A510,A508, A506,A504 and A502:</u>**

Except signals A506 and A504, all are Automatic Signals fitted with a disc painted white with letter "A" in black. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.

Signal A504 is Semi automatic signals provided with a "G" marker disc painted Yellow with letter "G" in black and illuminated "A" Marker light protecting LX 493 . "A" light is lit as soon as the gate is closed and locked. These signals display "OFF" aspects depending on the condition of Automatic section ahead i.e. when track portion up to next Automatic Signal and adequate distance beyond is clear of vehicles.

In case of gate failure (when 'A' marker light is extinguished) the driver passes the signal by "G" marker observing the gate rules as per GR 9.15(b). In case of track circuit failure, if the gate is closed, "A" light is lit and the driver need not follow the gate rules.

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A506 is **Mid section modified Semi automatic signal provided with illuminated "A" marker. While working in auto mode this signal will display the aspect depending on the clearance of section ahead and aspects displayed by signal. Under the condition, when "A" marker is extinguished, Loco Pilot can pass the signal when either the signal assumes off aspect or as per instructions for passing of this signal in failed condition. (GR 3.12 (1) (ba).**

(iii) Thus under this working, there can be only train on either side of Signal A-506.

13.3 Down Home Signal 2 of AGC is manually controlled Semi Automatic Signal operated from VDU available with SM at AGC. Similarly, Up Home Signal 02 of BHA is Semi Automatic Signal operated from VDU available with SM at BHA.

13.4 All the signals while working as Automatic / Semi Automatic Signals with "A" / "AG" marker lit normally display Green aspect and change their aspects automatically by the passage of train. As soon as a train passes ahead of an automatic signal, the signal changes its aspect to "RED", other signals in rear of this signal display aspect following sequence of four aspect signalling i.e. Red followed by yellow, yellow followed by Double Yellow and Double Yellow followed by Green.

13.5(i) The Up Advanced Starter Signal No. 3 (AGC) of AGC is controlled from the LCP of AGC and function as Automatic Signal when the signal is converted as auto signal by "AUTO ON" mode selection by SM. When the switch for AGC-BHA section (UP line) is in Auto Mode condition, S-3 will assume off aspect when track section up to Signal A-513, adequate distance beyond is clear. When the switch for AGC-BHA section is in MABS (MODIFIED AUTOMATIC SIGNALLING) Mode condition, S-3 will assume off aspect when track section up to A-517, adequate distance beyond is clear.

(ii) The Down Advanced Starter Signal No. 35 (BHA) of BHA is controlled from the LCP of BHA and function as Automatic Signal when the signal is converted as auto signal by 'Auto On' mode selection by SM/ BHA. When the switch for BHA-AGC section (DN line) is in Auto Mode condition, 35 (BHA) will assume off aspect when track section up Signal A-510, adequate distance beyond is clear. When the switch for BHA-AGC section is in MABS (MODIFIED AUTOMATIC SIGNALLING) MODE CONDITION, S-35(BHA) will assume off aspect when track section upto A-506 adequate distance beyond is clear.

13.6 (i) When the switch for AGC-BHA section (UP line) is in Auto Mode condition, A-517 will assume off aspect when track section up Signal A-519 and adequate distance beyond is clear. A marker provided on this signal will remain lit up. When the switch for AGC-BHA section is in MABS (MODIFIED AUTOMATIC SIGNALLING) Mode condition, the A-marker (and also AG marker ,if provided)will remain extinguished and it will assume off aspect when track section up-to UP Home Signal S-2 (BHA) and adequate distance beyond is clear.

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(ii) When the switch for BHA-AGC section (DN line) is in Auto Mode condition, A-506 will assume off aspect when track section up Signal A-504 and adequate distance beyond is clear. One of the lit up marker i.e. A will remain lit up in this condition. When the switch for BHA-AGC section is in MABS (MODIFIED AUTOMATIC SIGNALLING) Mode condition, both A marker (and also AG marker, if provided) will extinguish and it will assume off aspect when track section up-to S-2 UP Home Signal of AGC and adequate distance beyond is clear.

13.7 STATION MASTER'S CONTROL IN AUTOMATIC SECTION: Station Master AGC has been provided control over the following Automatic Signals in Automatic Signalling Section towards BHA:

(i) UP LINE : A515,A513
(ii) DOWN LINE : A506 (FOG SIGNAL), A504 and A502

13.8 **TRACK CIRCUITS IN AUTOMATIC SECTION**: The track circuits in Automatic Section towards BHA are as under:

(i) **UP LINE:** (3T/ 3XT, 3AXT1/3AXT2),(A513XT1/A513XT2, A513AXT1/A513AXT2), (A515XT1/A515XT2, A515AXT1/A515AXT2), (A517XT1/A517XT2, A517AXT1/A517AXT2), (A519XT1/A519XT2, A519AXT1/A519AXT2), (A521XT1/ A521XT2, A521AXT1/ A521AXT2),

(ii) **DOWN LINE:** (35T/ 35XT, 35AXT1/35AXT2),(A510XT1/A510XT2, A510AXT1/A510AXT2), (A508XT1/A508XT2, A508AXT1/A508AXT2), (A506XT1/A506XT2, A506AXT1/A506AXT2), (A504XT1/A504XT2, A504AXT1/A504AXT2), (A502XT1/ A502XT2, A502AXT1/ A502AXT2)
The complete Automatic section is track circuited by Axle counters track circuits which control the working of Automatic Signals.

13.9 **INDICATIONS WITH REGARD TO AUTOMATIC SECTIONS ON AGC**

(i) ALL aspects of Signals
DN direction signal: Signals A510,A508, A506,A504 and A502
UP direction signal: Signals A513, A515, A517, A519 and A521

(ii) Occupied / clear indications of track circuits

UP LINE: Separate Indication for both AXLE counter track circuit of each signal controlling sub section
DOWN LINE: Separate Indication for both AXLE counter track circuit of each signal controlling sub section

(iii) System working in "Auto Mode" or "MABS (Modified automatic Signalling) Mode" mode (GR 9.01(3) (b)).

14.0 **SIGNAL FAILURES IN AUTOMATIC SECTION**:
In case of failure of signals trains shall be worked as per instructions laid under G & SR 3.73, 9.02, 9.12, 9.14 & 9.15 as the case may be. Failure of any signal in this territory shall be reported as per G & SR 9.11. Any failure of track circuits

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which results in failure of signals in respective jurisdiction of **AGC-BHA** will be entered into Signal Failure Register.

15.0 Failures when **Modified Automatic Block Signalling** for visibility impaired condition like fog is in force:

(a) **Failure of Advanced Starter:** When 'A' marker (and AG Marker where provided) is extinguished, written authority T/369(3b)) to pass the signal and enter the next signaling section will be given when previous train has passed the next mid-section semi-automatic signal and adequate distance beyond. If the indication of mid-section semi-automatic signal and clearance of section between Advanced Starter and mid-section semi-automatic signal cannot be ascertained, the Station Master of the train dispatching station will talk to the Station Master of the receiving station and after confirming under exchange of private numbers that the previous train has arrived complete at receiving station. he will authorize the Loco Pilot to pass the defective Advanced Starter signal in 'ON' position.

In both the cases speed shall not exceed 10 kmph till the foot of next automatic signal and thereafter be guided by the aspect of the signal observing GR 9.02 and SR 3.61/2(a).

(b) **Failure of Modified Semi-Automatic Signal in mid-section (A-517 on up line and A-506 on DN line): GR 9.01(4) (a) to (c)**

i. If the mid-section semi-automatic signal becomes defective and/or shows 'RED' aspect due to any reason, the Loco Pilot will contact the Station Master of the receiving station ahead on telephone provided at the mid-section semi-automatic signal post and inform him about the same and proceed ahead on getting the verbal authority to pass signal at danger with private number of the Station Master which he will record in his working diary. Loco pilot will start his train and proceed up to next automatic stop signal with maximum 10 kmph and follow the aspect of next automatic signal observing GR 9.02 and SR 3.61/2(a).

ii. If loco pilot fails to contact with SM of receiving station, he will wait for 5 minutes at the foot of mid section modified semi-automatic stop signal and then proceed ahead observing GR 9.02 and SR 3.61/2(a). Loco pilot will report the same to next station.

iii. SM of receiving station will inform the dispatching station, who shall start a train only after confirming that the previous train has arrived complete at receiving station under exchange of private number. Dispatching station will issue T/901(4) to pass the defective mid section modified semi automatic stop signal without stopping. The loco pilot shall proceed observing GR 9.02 and SR 3.61/2(a). In case mid section modified semi automatic stop signal is protecting gate, it should be ensured that the gate has been closed and locked before granting line clear before dispatching a train.

(c) **Failure of Home Signal:** In this case, the Station Master of the receiving station will admit the train by taking 'OFF' calling-on signal or by issuing written authority when Calling-on signal is also defective. Such authority will be T/369(3b)).

(d)

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(e) Failure of Fog Switch.

In case after taking action as per Para-8 above by the respective Station Masters, 'A' marker on mid-section semi-automatic signal does not get extinguished, fog signaling system shall be taken to have failed in between the two relevant stations (*in case 'A' marker of Advanced and Home signals cannot be extinguished by operation of the fog switch/button, the Station Masters will extinguish the 'A' marker by means of facility available on the VDU/Panel*). In such a case, the Station Master of the train dispatching station will not dispatch a train in the section until the previous train has arrived complete at the receiving station which shall be confirmed by the exchange of private numbers. In case the Automatic Signalling for visibility impaired condition like fog fails any time due to any reason after the same has been introduced, the station master of the train dispatching station will not dispatch a train in the section until the previous train has arrived complete at the receiving station which shall be confirmed by the exchange of private numbers.

16.0 During the change over from normal automatic signaling to Automatic Signalling for visibility impaired condition like fog, it may so happen that a Loco Pilot may encounter a situation when the 'A' marker gets extinguished and aspect of the signal turns into 'ON' aspect while approaching any of the semi-automatic signals. In such a situation the Loco Pilot will stop his train, wail for 5 minutes. If signal remains red, talk SM of station ahead on SPT and after obtaining verbal authority with private no. proceed at a speed not exceeding 10 kmph till the foot of the next automatic and be guided by the aspect of this signal. In case the loco pilot has passed the signal, he shall stop and proceed cautiously so as to be prepared to stop short of any obstruction until next automatic stop signal is reached and shall act upon it's indications.

17.0 During clear weather when loco pilot finds A or AG marker of mid section modified semi automatic stop signal is extinguished and aspect of the signal remains ON, shall bring his train to stop and shall contact SM ahead on SPT. The SM after ensuring that the modified system is not in force give ca private no. Loco pilot will record it in his pocket diary and observe GR 9.02. If no contact with SM, loco pilot will wait for 5 minutes, if still signal remains ON, will proceed ahead as per GR 9.02 and report the same to station ahead on Walkie -Talkie or by written memo.

18.0 At the time of introducing the Automatic Signalling for visibility impaired condition like fog, the Station Masters concerned controlling the mid-section semi-automatic signal should, as far as possible, take care that the aspect of this signal is 'ON' to avoid sudden braking by the Loco Pilot of the approaching train. In addition, the Advanced Starter and the Home Signal shall normally be put in manual mode before introducing the changeover.

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