

EAST COAST RAILWAY
WALTAIR DIVISION

STATION WORKING RULES OF DUVVADA STATION
(BROAD GAUGE)

Date of Issue:

Date brought into force:

NOTE:-

The Station Working Rules must be read in conjunction with General & Subsidiary rules, Block Working Manual and Operating Manual. These rules do not in any way supersede any rule in the above books.

(1) STATION WORKING RULE DIAGRAM

- a. Station Working Diagram No: S.I/WRD 23243
- b. SIP No: SI 23243
- c. Date up to which corrected:

(2) DESCRIPTION OF THE STATION

- a. GENERAL (Location):

A	Name of the Station	DUVVADA (DVD)
B	Class of Station	‘SPL’-Class
C	Section	HWH-MAS
D	Double Line/Single Line	Double Line
E	Electrified/Non-Electrified	Electrified
F	Gauge BG/MG/NG	BG
G	Railway	EAST COAST RAILWAY
H	Route	‘B’-Route
I	Situated at KM	882.790
J	From	HWH
K	Operations	Centrally operated with Visual Display Unit (VDU)
L	Standard of Interlocking	Standard III

2.2 BLOCK STATIONS, IBS ON BOTH SIDES, THEIR DISTANCE AND OUT LYING SIDINGS

SL.	Adjacent Block Station	Distance	Direction
A	THADY (THY)	9.0 KM	CHENNAI (MAS) END
B	GOPALAPATNAM (GPT)	10.420 KM	VSKP END
C	JAGGAYAPALEM(JGPM)	5.265 KM	NORTH SIDE (VSPS Line)
D	VADLAPUDI (VDPD)	5.022 KM	NORTH SIDE (VSPS Side)
E	NTPC Xing Station	16.603 KM	SOUTH SIDE
F	Automatic Signaling	Between DVD-GPT both UP & DN Lines.	
G	DK Station & Out Lying Siding	NTPC Xing Station is the outlying siding taking off from the yard as independent route at south end.	
H	Provision of IBS	Section DVD-THY	UP IBH at Km 756.900 F/MAS
			DN IBH at Km 757.075 F/MAS/

2.3 BLOCK SECTION LIMITS ON EITHER SIDE OF THE STATION ON DIFFERENT DIRECTIONS

Between Stations		The Point from which the 'Block Section' Commences	The Point at which the 'Block Section terminates.
DVD-GPT	UP Line	From UP Adv.str No.SA-36 of GPT	Up to BSLB of DVD.
	DN Line	From DN Adv.str. No.SA-50 of DVD.	Up to BSLB of GPT.
DVD-THY	UP Line	1. From UP Adv. Str. No 1 of DVD. 2. From UP IBS No.7	1. Up to UP IBS No.7 + 400M 2. Up to Pt.No.19 of THY.
	DN Line	1. From Down Adv.Str. Signal of Thadi. 2. From DN IBS No. 5 of THY	1. Up to DN IBS No. 5 of THY + 400M. 2. Up to Point No.102 B of DVD.
DVD-VDPD		From Down Adv.Str. Signal No. 52 of DVD.	Up to UP last stop signal of VDPD at North end.
DVD-JGPM Single Line		From Down Adv.Str. Signal No. 54 of DVD.	Up to UP last stop signal of JGPM at North end.
DVD-NTPC Single Line		From Down Adv. Str. signal No. 3 of DVD.	Up to the down last stop signal of NTPC crossing station.

2.4 GRADIENTS

Station towards	Chainage		Inter Distance	Gradient
	From	To		
VSKP DN LINE	0.000 M	100.000 M	100.000 M	1 IN 450 Falling
	100.000 M	200.000 M	100.000 M	LEVEL
	200.000 M	715.000 M	515.000 M	1 IN 260 Falling
	715.000 M	1525.000 M	810.000 M	1 IN 150 Falling
	1525.000 M	1900.000 M	375.000 M	1 IN 125 Falling
	1900.000 M	3150.000 M	1250.000 M	1 IN 150 Falling
	3150.000 M	Into section	--	1 IN 164 Falling
VSKP UP LINE	0.000 M	150 M	150 M	1 IN 615 Raising
	150 M	235.14 M	85.14 M	LEVEL
	235.14 M	910 M	675.14 M	1 IN 260 Falling
	910 M	1700 M	790 M	1 IN 233 Falling
	1700 M	1800 M	100 M	LEVEL
	1800 M	3125 M	1325 M	1 IN 230 Falling
	3125 M	Into section	-	1 IN 150 Falling
THY UP LINE	0.000 M	350M	350M	1 IN 615 Falling
	350M	575M	224M	1 IN 600 Falling
	575 M	1210 M	635 M	1 IN 260 Raising
	1210 M	1550 M	340 M	1 IN 232 Raising
	1550 M	2050 M	500 M	1 IN 280 Raising
	2050 M	2550 M	500 M	1 IN 210 Raising
	2550 M	2850 M	300 M	1 IN 400 Raising
	2850 M	3100 M	250 M	1 IN 225 Raising
	3100 M	3275 M	175 M	1 IN 325 Raising
	3275 M	3807 M	532 M	1 IN 260 Raising
THY DN LINE	0.000 M	425M	425M	1 IN 450 Raising
	425 M	575 M	150 M	1 IN 944 Raising
	575 M	1200 M	625 M	1 IN 260 Raising
	1200 M	1382 M	182 M	LEVEL
	1382 M	2350 M	968 M	1 IN 179 Raising
	2350 M	2950 M	600 M	1 IN 165 Raising
	2950 M	3300 M	350 M	1 IN 230 Raising
	3300 M	3450 M	150 M	1 IN 700 Raising
	3450 M	Into section	--	LEVEL
DVD-VDPD	0.000 M	910M	910 M	1 IN 260 Falling
	910 M	1018.68 M	108.68 M	1 IN 260 Falling
	1018.68 M	1125 M	107.68 M	LEVEL
	1125 M	1300 M	175 M	1 IN 582 Falling
	1300 M	1975 M	675 M	1 IN 192 Falling
	1975 M	2050 M	75 M	LEVEL
	2050 M	3300 M	1250 M	1 IN 180 Falling
	3300 M	Into section	-	1 IN 250 Falling

DVD -JGPM	0.000 M	587.340 M	587.340 M	1 IN 260 Falling
	587.340 M	1600 M	1012.660 M	1 IN 150 Falling
	1600 M	1950 M	350 M	LEVEL
	1950 M	2120 M		1 IN 200 Falling
	2120 M	Into section	-	LEVEL
DVD-NTPC	0.000 M	587.340 M	587.340 M	1 IN 260 Falling
	587.340 M	1600 M	1012.660 M	1 IN 150 Falling
	1600 M	1950 M	350 M	LEVEL
	1950 M	2120 M		1 IN 200 Falling
	2120 M	Into section	-	LEVEL

2.5 LAYOUT

(A) RUNNING LINES IN THE MAIN YARD

S.No	Name of the line	Electrified/ Non Electrified	Platforms with length
1	Line No.-1 (Common Loop)	Electrified	H.L Platform (550 M X 10 M)
2	Line No.-2 (Down Main)	Electrified	NIL
3	Line No.-3 (Down Loop)	Electrified	H.L. Platform (563.5M X 5.91 M)
4	Line No.-4 (Common Loop)	Electrified	H.L Platform (563.5M X 5.91 M)
5	Line No.-5 (Up Main)	Electrified	H.L Platform (560.7M X 7.32 M)
6	Line No.-6 (NTPC Loop)	Electrified	NIL
7	Line No.-7 (NTPC Main)	Electrified	NIL

(B) SIDINGS: NIL

2.5.1 RUNNING LINES, DIRECTION OF TRAFFIC & HOLDING CAPACITY IN CSL:

S No	Name of the lines	Holding capacity in CSL	Direction of movements
1	Line-1 (Common Loop)	752 (STR-STR)	Trains coming from GPT, VDPD, JGPM and proceeding towards THY and R&D yard of NTPC are UP trains. Trains coming from THY and R&D Yard of NTPC and proceeding towards VSKP, VDPD and JGPM are DN trains.
2	Line-2 (DN MAIN)	735 (SHUNT-STR)	
3	Line-3 (DN Loop)	712 (SHUNT-STR)	
4	Line-4 (Common Loop)	740 (STR-STR)	
5	Line-5 (UP MAIN)	762 (STR-SH)	
6	Line-6 (NTPC Loop)	722 (STR-STR)	
7	Line-7 (NTPC M/L)	734 (STR-STR)	

2.5.2 NON RUNNING LINES: NIL

2.5.3 ANY SPECIAL FEATURES IN THE LAYOUT:

- NTPC lines are runs through DVD yard which is connected from JGPM. Line No.6 & 7 is named as NTPC line at DVD yard with the status of running lines.
- The siding section between JGPM-DVD and DVD-NTPC Xing station is worked under Absolute block system of working with single line working and token less block working.

- iii) One new Xing panel station is commissioned between DVD-NTPC yard. The Station Master of NTPC crossing station shall grant / obtain line clear from the adjacent block station DVD.
- iv) UP Home signal No.45 A/B of NTPC line is placed on right hand side vide WRD foot note item No.9.
- v) Speed restriction board of '10' KMPH is provided on signal No.34 for cup shaped movements vide foot note item No.19.
- vi) Permanent speed restriction of 15 KMPH is imposed on PF no.2 & 3 i.e. on line No.3 & 4 in either direction vide foot note item No.22.
- vii) Signal No.45 A/B is placed at RHS of the track.

2.6 LEVEL CROSSINGS

Details are given in Appendix –‘A’

(3)SYSTEM AND MEANS OF WORKING:

1	System of working in force	Absolute Block System: (DVD-THY, DVD-JGPM, DVD-NTPC, DVD-VDPD) Automatic Signaling: DVD-GPT
2	Double Line/Single Line	Double Line: DVD-GPT & DVD-THY Single Line: DVD-JGPM, DVD-NTPC & DVD-VDPD.
3	Block Instruments	SGE type lock and Block Instrument: DVD-THY, Single Line Token Less: DVD-JGPM, DVD-NTPC & DVD-VDPD
4	Co-operative/ Non-co-operative	Non-co-operative: DVD-THY Co-operative: DVD-JGPM, DVD-NTPC & DVD-VDPD
5	Block Telephones	Attached with Block Instruments
6	Telephone attached to IBS	UP IBS at KM 756.900 F/MAS
7	Custody of Block instrument keys	SM is responsible for operation of the Block instruments. The Station Master on duty is the only authorized person to operate the instruments and their keys shall be in the personal custody vide GR 5.08 and 14.12(a). Block instrument is provided with double locking. One key will be with SM and other key will be with S&T maintainer.

(4) SYSTEM OF SIGNALLING AND INTERLOCKING

4.1

1	Standard of Interlocking	Standard – III
2	Type of Signaling	MACLS
3	Mode of Operating the signals	Visual Display Unit (VDU) with standby facility.

4	Provision of Calling –On signals	Calling on signals are provided to receive/dispatch trains in the event of failure of the main reception/dispatch signals due to track circuit / axle counter failure. Calling-on signal option will be selected on popup menu after the train has come to a stop at the foot of the reception/dispatch signal ensured by seeing the track red indication. After selecting the calling on signal of required route, the signal will clear after a lapse of 60 seconds for reception signals and 0 seconds for dispatch signals. The respective counter registers the operation by an increment of one number on the count.
5	Provision of Shunt signals	SH-8, SH-10, SH-11, SH-15, SH-17, SH-18, SH-19, SH-20, SH-21, SH-23, SH-25, SH-27, SH-28, SH-30, SH-32, SH-34, SH-35& SH-36, SH-37, SH-38, SH-39, SH-40 and SH-48 are provided.
6	Emergency cross over	THY end: 102 & 104, NTPC end: 103 & 105, GPT end: 125 & 129, VSPS end: 130
7	Track circuits	The station yard is provided with track circuits along with 5Rail length Calling-ON track circuits for Main reception/dispatch signals to ascertain proper positioning of train movement.
8	Axle counters	Refer 14.0 of Appendix ‘B’ of this SWR.
9	Crank handle	Refer 4.7 and 5.3 of Appendix ‘B’ of this SWR.
10	Emergency Point operation:	Refer 5.2 of Appendix ‘B’ of this SWR.
11	Showing of Veedor Counters	One counter icon has been provided on the VDU. When selected a drop-down menu will appear indicating the following counters. Emergency Route Release Counter. Emergency Point Operation Counter. Crank Handle Release Counter. Up Calling on Counter. DN Calling on Counter. DN IB RESET Permission counter UP IB RESET ACK counter.
12	Emergency route release indication:	Refer 5.0, 6.0 & 3.3 (C) of Appendix ‘B’ of this SWR.
13	Emergency Crank Handle release.	As per Para 2.5 & 3.4 of Appendix ‘B’
14	Emergency Gate release.	NIL

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

Custody of Relay room key and procedure for its handover and taking over between SM and S&T staff has to follow the procedure as per JPO issued by COM and CSTE vide No. JPO/02/2012 dated 29.08.2012.

As per JPO/02/2012, the following procedure shall be adopted for opening of Relay Room:

The Relay room of station shall have double locking system of operating and S&T locks. One lock shall be provided on the door of Relay room by the Station Master. This lock is named as operating lock. The key shall be kept in the safe custody in the Key-box with the SM on duty. Likewise, one lock shall be provided on the door of Relay room by the Signal Maintainer/Signal supervisor of the section.

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

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

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

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

Entry to be made in S&T failure register by SM on duty and failure Memo has to be issued to S&T staff. S&T staff shall not take the Relay room key for attending failures and open the Relay room unless the failure is recorded in Signal failure register. If disconnection is required, Disconnection Memo has to be given by S&T staff to SM on duty. Failure memo should be acknowledged and entry in relay room key registers to be made by S&T staff before obtaining Station Master's key. Relay Room key for schedule maintenance shall be taken once in a calendar Month during monthly inspection by Sectional Supervisor. Relay room can be opened by following above procedure for special maintenance activities like cable insulation testing, Block/disconnection memos, selection table testing, maintenance work inside relay room by Electrical and Engineering staff, during failures, E.I resetting and inspection by Divisional and Headquarter officials, works required by Construction & Open line staff for preparatory works and during commissioning. In each such case, the construction staff shall follow the detailed guidelines issued regarding working on signaling gears under the charge of open line.

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

In case SS/SM on duty comes to know that Relay room opening by unauthorized means or by unauthorized person or by any group-'D' staff, the signaling system shall be suspended by him and matter immediately reported to Section controller for necessary action. Senior Section engineer (signal) & TI of the respective section will check the station records of Relay room opening during their inspections and cross check it with data logger if provided. Discrepancy, if any shall be immediately inquired into and advised to Sr. DSTE & Sr.DOM by numbered control message from the station immediately for further action.

4.3 POWER SUPPLY:

- i) Auto changeover panel is provided in the Station Master's Office with the three power supplies viz., NTPC AT, UP AT and Local, for changing the switch to the required supply position.
- ii) Normally the switch will be kept towards NTPC AT or UP AT position. Whenever power block is to be given on the line, the on-duty SM must ascertain that power is available on the other AT. If power block is to be given on the UP line, NTPC AT must be available and vice-versa.
- iii) In case of failure of one of the AT supply without any power block, the on duty SM has to check the manual switches provided in the SM room. In case of failure of both AT supplies, the Local supply shall be utilized by operating the switch. In case a failure of both UP AT & NTPC AT supplies a message shall be given to the ADEE (TRD) and SSE/PSI for prompt rectification.
- iv) For IPS system that provides power supply to the signaling installation 230V AC is taken from the selection output of the Auto change Over Panel in SM Office. There is a remote monitoring ASM box provided at the station to monitor the health of IPS.

REMOTE MONITORING ASM BOX:

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

- i) 50% depth of discharge (DOD) of battery. In this condition audio/visual alarm comes, which can be acknowledged with audio cut-off.
- ii) 60% DOD, which warns for emergency. The alarm for this condition is same as for Condition1.

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

(5) TELECOMMUNICATIONS

The details of telecommunication facilities for train working provided at the station are mentioned below.

1	Control Phone	VSKP-DVD-SCMN-WMY-VSPS-KTV Complex board.
2	TPC (Traction Power Control)	DVD-VSKP-PSA Section
3	Block telephone	DVD-THY, DVD-NTPC (crossing Station), DVD-VDPD, DVD-JGPM
4	Hot Line	DVD-JGPM, DVD-GPT, DVD-THY, DVD-VDPD, DVD -NTPC (crossing station).
5	VHF communication	Provided.
6	Crank Handle	Provided to UP & DN Crank handle locations & LV Box locations.
7	Auto telephone	Connecting to Divisional Exchange.
8	CUG Phone	Provided.
9	IB Telephone	DVD & UP IBS at KM 756.900 in DVD-THY section.
10	LC Gate	DVD & LC gate at KM 763/26-28 (BC-2) DVD-GPT.

(6) SYSTEM OF TRAIN WORKING

6.1.1 TRAIN WORKING STAFF IN EACH SHIFT:

The following is the Complement of operating Staff at the station.

SL No.	COMPLEMENT OF STAFF	STAFF IN EACH SHIFT
1	Station Master	02
2	Points Man	02

The above staff shall work as per roster issued from time to time by Divisional Operating Manager and these rosters shall be conspicuously displayed in the Station Master's office.

6.1.2 **RESPONSIBILITY FOR ASCERTAINING CLEARANCE OF THE LINE AND ZONES OF RESPONSIBILITY:**

Station Master is solely responsible to ascertain clearance of line from Home up to Adv. Starter Signals on concerned lines by indication on VDU.

USE OF PRIVATE NUMBER BOOKS AND IDENTIFICATION NUMBER SHEETS:

Sufficient private number books and identification number sheets in sealed covers shall always be kept in stock by SMR under lock key by maintaining register for this purpose.

6.1.3 ASSURANCE OF STAFF IN THE ASSURANCE REGISTER:

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

No Railway servant shall be entrusted with any duty involving the safety of the public unless the SM (In-Charge) is satisfied that the concerned staff is competent for the post. No Railway servant unless duly examined and certified shall be allowed to work the points and signals.

The SM (In-Charge) is responsible to see that all the staff are well conversant with the Station Working Rules of the Station and their signature obtained in the Assurance Register after he is satisfied that they have thoroughly understood the working Rules of the Station. In case of Class-IV staff, their signature/thumb impression must be obtained after explaining full about their duties and responsibility.

The SM (In-Charge) is personally responsible for maintaining the Assurance Register and for obtaining declaration from the staff working under him. The Assurance Register must be maintained in two parts one for Group-‘C’ staff and other for Group-‘D’ staff & duplicate copy of the Assurance Register must be maintained and kept in the personal custody by the SM (In-Charge).

Fresh assurance shall be obtained in the Assurance Register when:

1. He joins at the station as a new member.
2. There is any change in the Station Working Rules.
3. He resumes duty at the station after an absence of 15 consecutive days or more.

6.2 CONDITIONS FOR GRANTING LINE CLEAR

a. DOUBLE LINE AUTOMATIC BLOCK SECTION (For section DVD-GPT)

Taking/Granting line clear to UP and DN trains are not required during normal working as per BWM 7.05(1) and GR 9.01 (c) (i) & 9.01(2).

b. DOUBLE LINE ABSOLUTE BLOCK SECTION (For section DVD-THY):

- i). The conditions laid in GR 8.01, 8.03 (1) (a) (b) (c) (ii) shall be complied with the SM on duty before line is considered clear.
- ii). Line shall not be considered clear and line clear shall not be granted to a DN train unless:
 - a. SM ensures the reception signals pertaining to a train are in ‘ON’ position and glowing properly Vide GR 3.49 (4).
 - b. Whole of the last preceding train has arrived completely.
 - c. DN Home signal/Calling on signal are put back to ‘ON’ position.
 - d. Line is clear up to 2T2 track of DVD.

a) SINGLE LINE SECTION (For section DVD-VDPD, DVD-JGPM & DVD-NTPC):

Trains are worked under Absolute Block System and the condition drawn in GR 8.01 & 8.03 (2)(a),(b) & (c)(ii) shall be complied with before granting line clear.

c) Adequate distance for reception of trains at DVD.

LINE NO	UP TRAINS		DN TRAINS	
	FROM	TO	FROM	TO
L/NO-1 (COMMON LOOP)	UP Starter Signal No.15	The end of overrun line OR UP Advanced Starter Signals S-1 OR S-3	DN Starter Signal No.28	The end of overrun line OR DN Intermediate Starter Signal S-48
L/NO-2 (DN MAIN)	--	--	DN Starter Signal No.30	Up to DN Intermediate Starter Signal S-48
L/NO-3 (DN LOOP)	--	--	DN Starter Signal No.32	The end of overrun line OR DN Advanced Starter Signals S-48
L/NO.4 (COMMON LOOP)	UP STR.NO.17	UP ADV STR. NO.1 or 3 OR The end of overrun line	DN STR.No.34	DN Intermediate STR No. 48 OR The end of overrun line OR Up to DN Advance starter S-52
L/NO.5 (UP MAIN)	UP MAIN STR. NO.19	UP ADV STR. NO.1 or 3	--	--
L/NO.6 (NTPC LOOP)	UP LOOP STR NO.21	Up to Intermediate STR. NO.11 OR The end of overrun line	DN LOOP STR. No.36	DN ADV STR. NO. 54 OR END OF SAND HUMP
L/NO.7 (NTPC MAIN)	UP STR NO.23	Up to Intermediate STR NO. 11	DN STR.NO.38	DN ADV STR. NO.54

6.2.1 SPECIAL CONDITIONS TO BE OBSERVED WHILE RECEIVING OR DESPATCHING A TRAIN: NIL

6.2.1.1 SETTING OF POINTS AGAINST BLOCKED LINE

When a running line is blocked by 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 should be immediately set against the blocked line except when shunting or any other movement is required to be done on that line vide GR 3.51.06.

Safety Point Alarm Unit (SPAU):

A safety point alarm is provided on the panel board with different indications:

1. On complete arrival of a train at the station, the SM has to set the points immediately against the occupied line.
2. In case the SM forgets to alter the points, after a time lag of 02 minutes, an audible buzzer will be heard from this instrument along with the 'RED' indication of the line on which the train has arrived.
3. The SM shall then press 'ACK' button to mute the buzzer, and immediately set the required points against the line on which the train has arrived.
4. On setting the points against the occupied line, the RED indication will disappear.
5. In case SM fails to set the required points against the occupied line a fault message will be triggered SMS will be sent to concerned station mobile and all concerned staff to take necessary action.

If all the lines of a station happen to be blocked when line clear has been granted to a train the safety point alarm will not work and the point should be set for the line occupied by a stable load or a goods train by SM on duty in that order so that, in case of mishap, the chance of causalities minimized. In case of all the lines are occupied by passenger trains points should be set for a loop line to negotiate which the speed of incoming train would be reduced which in turn would minimize the consequences/causalities vide SR 3.51.06(b). These precautions shall be taken in addition to the observance of other precautions as contained in SR 5.04.01 and SR 5.23.01. In case of all the lines are occupied by Coaching train, points should be set for a loop line to negotiate with the speed of incoming train would be reduced which in turn, would minimize the consequences/causalities. Concern Line Block icon on VDU shall be enabled for blocked line.

6.2.1.2 RECEPTION OF TRAINS ON BLOCKED.

Trains are to be admitted on a blocked line, by taking off calling-on signal as per GR 5.09(2) (a) or if calling signal cannot be taken off, trains are to be piloted in on a written

authority on Form T/509 given by SM on duty and delivered by a competent railway servant to the Loco Pilot of the train as per GR 5.09 (2) (C) (3) (4) (5) and SR 5.09.01.

6.2.1.3 RECEPTION OF TRAINS ON NON-SIGNALLED LINE:

All running lines at the station are equipped with reception signals. If it becomes necessary to admit a train on non-signalized line the rules laid in GR 5.10 with SR there to shall be followed.

6.2.1.4 DESPATCH OF TRAINS FROM NON-SIGNALLED LINE: NIL

6.2.1.5 DESPATCH OF TRAINS FROM A LINE PROVIDED WITH COMMON STARTER SIGNAL: NIL

6.2.1.6 ANY SPECIAL CONDITIONS TO BE OBSERVED.

a) Special Restriction:

1. Shunting in face of approaching train is prohibited in station section towards GPT end.
2. UP trains shall not be detained outside UP Home signal of DVD to prevent rolling back of train due to 1 in 125 UP gradient.

b) Special Instructions:

Vide PCOM/ECOR's Letter No.ECOR/OPTG/SC/55/XV/SPL.INST/DVD DTD. 23.12.2021, in terms of General Rule 3.47, Special Instructions are issued to facilitate following simultaneous movements of trains at Duvvada station keeping 300 meters physical separation distance between the path of two trains during simultaneous movements.

SIMULTANEOUS MOVEMENTS:

1. Reception of UP Goods train on line no.7 from Jaggayyapalem (JGPM) end setting overlap up to Signal no.11 and reception of DN Goods train on line no.1 or 2 or 3 or 4 from NTPC end with Point no.I03A/B in reverse condition with a speed restriction of 30 kmph during Caution aspect on UP Home Signal no.S-45. A Board indicating speed restriction on Caution aspect shall be fixed below the Home Signal no.S-45.
2. Reception of UP Goods train on line no.7 from Jaggayyapalem (JGPM) end setting overlap up to Signal no.S-11 and dispatch of another UP Goods train from line no. 1 or 4 or 5 towards NTPC end with Point no.103A/B in reverse condition.
3. Reception of UP Goods train on line no.5 from Vadlapudi (VDPD) end with Point no.130 A/B in reverse condition and dispatch of another UP Goods train from line no.1 towards NTPC end with Points no.I03A/B and 104 A/B in reverse condition.

6.3 CONDITIONS FOR TAKING "OFF" APPROACH SIGNAL.

The SM on duty shall nominate a clear line not only up to the starter but also for an adequate distance beyond it for reception of trains. [Refer GR 3.07(4)(5), 3.08(4)(b) 3.36, 3.38, 3.40, 4.17 and SR 3.36. 01, 3.36.02, 3.36.04, 3.40.01, 3.40.02, 3.47.01, 4.17.02, and Block Working Manual.

6.3.1 RESPONSIBILITY OF STATION MASTER FOR RESTORATION OF SIGNALS TO 'ON' POSITION

Station Master should ensure that signal is put back to 'ON' after passage of the train as per GR 3.36.2 (b).

6.4 SIMULTANEOUS RECEPTION AND DESPATCH OF TRAINS:

According to the existing inter locking at this station the simultaneous reception and dispatch of trains are permitted as stipulated below.

1.	Reception of an UP train on Line No.1 setting overlaps to Overrun Line (Common Loop).	AND	Reception of DN train on Line No.3 or 4 or 6 or 7. OR Reception of UP train from JGPM on L-6 or L-7. OR Dispatch of another UP train either from Line No 4 or 5 or 6 or 7.
2.	Reception of an UP train on Line No.4 setting overlaps to Overrun Line (Common Loop).	AND	Reception of DN train on Line No.1 or 2 or 3 or 6 or 7. OR Reception of UP train from JGPM on L-6 or L-7. OR Dispatch of another UP train either from Line No.1 or 5 or 6 or 7.
3.	Reception of an UP train from GPT on Line No.5 setting overlaps up to 105 BT1 (UP Main).	AND	Dispatch of another UP train either from Line No.6 or 7.
4.	Reception of an UP train on Line No.6 setting overlaps up to Overrun Line (NTPC Loop).	AND	Dispatch of another UP train from Line No.7.
5.	Reception of an UP train on Line No.7 setting overlaps up to S-11 (NTPC Main).	AND	Receptions of DN Goods train from NTPC end on Line No.1 or 2 or 3 or 4. OR Dispatch of UP goods train towards NTPC from Line no 1 or 4 or 5.
6.	Reception of a DN train from Thadi (THY) on Line No.1 setting overlaps to Overrun Line (Common Loop).	AND	Dispatch of another DN train either from Line No.2 or 3 or 4.

7.	Reception of a DN train from NTPC on Line No.1 setting overlaps to Overrun Line (Common Loop).	AND	Reception of an UP train from GPT on Line No.4. OR Reception of an UP train from VDPD on Line No.4 or 5. OR Reception of an UP train from JGPM on Line No.6 or 7. OR Dispatch of another DN train either from Line No.2 or 3 or 4.
8.	Reception of a DN train from NTPC on Line No.2 setting overlaps up to S-48 (DN MAIN).	AND	Reception of an UP train from GPT on Line No.4. OR Reception of an UP train from VDPD on Line No.4 or 5. OR Reception of an UP train from JGPM on Line No.6 or 7. OR Dispatch of another DN train either from Line No.6 or 7.
9.	Reception of a DN train from Thadi (THY) on Line No.3 setting overlaps up to Overrun Line (DN Loop).	AND	Dispatch of another DN train either from Line No.1 or 2 or 4 or 6 or 7.
10.	Reception of a DN train from NTPC on Line No.3 setting overlaps up to Overrun Line (DN Loop).		Reception of an UP train from GPT on Line No.4. OR Reception of an UP train from VDPD on Line No.4 or 5. OR Reception of an UP train from JGPM on Line No.6 or 7. OR Dispatch of another DN train either from Line No.1 or 2 or 4.
11.	Reception of a DN train from Thadi (THY) on Line No.4 setting overlaps up to Overrun Line (Common Loop).	AND	Reception of an UP train on Line No.1. OR Dispatch of another DN train either from Line No.1 or 2 or 3.
12.	Reception of a DN train on Line No.4 from NTPC setting overlaps up to	AND	Reception of an UP train on Line No.1.

	Overrun Line (Common Loop).		<p>OR</p> <p>Reception of UP Goods train from JGPM on Line no 6 or 7.</p> <p>OR</p> <p>Dispatch of another DN train either from Line No.1 or 2 or 3.</p> <p>OR</p> <p>Reception of DN train on Line no 1 or 2 or 3.</p>
13.	Reception of a DN train from THY on Line No.6 setting overlaps up to sand hump (NTPC Loop).	AND	<p>Reception of UP train from GPT on Line No.1 or 4.</p> <p>OR</p> <p>Reception of UP train from VDPD on Line No.1 or 4 or 5.</p> <p>OR</p> <p>Dispatch of another DN train either from Line No.1 or 2 or 3 or 4</p>
14.	Reception of a DN train from Thadi (THY) on Line No.7 setting overlaps up to S-54 (NTPC Main).	AND	<p>Reception of UP train from GPT on Line No.1 or 4.</p> <p>OR</p> <p>Reception of UP train from VDPD on Line No.1 or 4 or 5.</p> <p>OR</p> <p>Dispatch of another DN train either from Line No.1 or 2 or 3 or 4</p>
In addition to this, vide PCOM/ECOR's Letter No.ECOR/OPTG/SC/55/XV/SPL. INST/DVD DTD. 23.12.2021 following simultaneous movements of trains at Duvvada station is allowed.			
15.	Reception of UP Goods train on line no.7 from Jaggayyapalem end setting overlap up to Signal no.11.	AND	Reception of DN Goods train on line no.1 or 2 or 3 or 4 from NTPC end with Point no.I03A/B in reverse condition with a speed restriction of 30 kmph during Caution aspect on UP Home Signal no.S-45.
16.	Reception of UP Goods train on line no.7 from Jaggayyapalem end setting overlap up to Signal no.S-11.	AND	Dispatch of another UP Goods train from line no. 1 or 4 or 5 towards NTPC end with Point no.103A/B in reverse condition.
17.	Reception of an UP Goods train on line no.5 from Vadlapudi (VDPD)	AND	Reception of a DN Goods train from NTPC end on line no.1 or 2 or 3 with

	end with Point no. 130A/B in reverse condition.		Point no.103A/B and 104A/B in reverse condition.
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6.4.1 CROSSING OF TRAINS

In addition to the normal provision of reception and dispatch of trains, the rules laid down in SR 3.47-01 and SR 3.51.06 shall be followed.

6.5 COMPLETE ARRIVAL OF THE TRAINS:

(A) BETWEEN DVD-GPT SECTION:

The entire block section between DVD-GPT on both UP and DN lines are monitored by Automatic Block Signaling and the position of the auto section whether 'occupied' or 'clear' is indicated in VDU at SM's room. Both side Advanced Starters are controlled by signal in advance of Auto section. As soon as train occupies the first auto section, the 'RED' indication appears in the VDU. After whole train clears the first auto section, clear indication 'GREEN' appears on the VDU of auto section. When the train clears the track circuit No. 41T2 provided beyond the UP home signal, this indicates complete arrival of the UP train. When the train clears the track circuit No.2T2 provided beyond the DN Home Signal, this indicates complete arrival of the train in DN train. Thereafter, SM on duty shall inform to the SM of the rear station regarding complete arrival of the train indicating the number and description of the train and its arrival time supported by a Private Number.

If a train passes through the station without confirming the last vehicle indicator then SR 4.17.02 and 4.17.03 shall be followed.

If a train arrive without the last vehicle indicator then action shall be taken by SM on duty as per GR 4.17 and SR thereto.

When Motor trolley follows a train the points shall not be operated until the following motor trolley is admitted on the same line. In the event of motor trolley is delayed in the section, the SM on duty shall take action in terms of SR 15.25.08.

(B) BETWEEN DVD-THY, DVD-JGPM, DVD-VDPD & DVD-NTPC SECTION:

The entire block section DVD-THY are monitored by Dual Multi Section Axle Counter (MSDAC) system and the position of the block section whether 'Occupied' or 'Clear' is indicated on resetting VDU at SS/SM's office. The sections between DVD-JGPM, DVD-VDPD & DVD-NTPC are provided with Single Section Digital Axle Counter (SSDAC). As soon as train enters in to the block section the RED indication appears on VDU. After whole train clears the block section GREEN indication appears on the VDU. This confirms the complete arrival of train and SM on duty shall give 'Train out of Block Section' report on seeing the section clear indication GREEN on the VDU.

In case a train passes incomplete, action shall be taken as per SR.4.17.02, “Train out of Block Section” report shall be withheld to the station in rear until Complete Arrival Certificate is received from the station in advance supported by a private number.

6.6 DISPATCH OF TRAINS:

To dispatch a train, the Station master on duty after obtaining line clear for that train, shall set the route for the outgoing train correctly and satisfy himself by observing the Indication on the VDU. He shall ensure that the Level crossing Gate is closed against road traffic and then shall take “OFF” the concerned signals. The ‘OFF’ aspect of the advanced starter is the authority to proceed into the block section. As soon as the train passes the advanced starter signal. Train entering section indication will appear on the VDU .The SM will then send the train entering given section signal to the station in advance. [Refer GR 3.38, 3.42, SR 3.42.02(a)(iv),3.42.03 3.42.04 and BWM 2.07.5(a)]

Dispatch of trains under Automatic Block system between section Duvvada and Gopalapatnam shall be governed in accordance with the provisions contained in G&SR Para Nos9.01(1) (a) (b)(c), i, ii, 9.01(2), 9.02(1)(2)(3)(4)(5) and SRs there to 9.09, 9.10(1)(2), 9.11(1)(2) and SRs there to 9.12 and SRs there to 9.14 and SRs there to and 9.15 and Block Working Manual Chapter No VI.

6.7 TRAINS RUNNING THROUGH:

In addition to procedure detailed in paras 'Reception and Dispatch' of trains, rules laid down in GR 3.40, 4.17, 4.42 with relevant SRs 3.36.40 and 3.42.02(a)(ii) and other relevant provisions of G &SR, BWM & OM shall be followed. In case of nonstop train the Station Master on duty will give prior instructions to the Station Master on duty operating block instruments to obtain line clear from the station in advance supported by a private number and getting line clear SM operating VDU shall take ‘off’ the departure signals in time to avoid detention to the through trains.

6.8 WORKING IN CASE OF FAILURE PROCEDURE TO BE FOLLOWED FOR WORKING OF TRAINS DURING FAILURE/SUSPENSION OF INTERLOCKING / SIGNALS / POINTS:

TRACK CIRCUITS	Whenever there is a failure of track circuit zone the clearance of the zone must be verified physically before initiating any movement over the zone. When there is a failure of point zone track circuit the concerned point may not operate from the VDU. In such case the points may be operated by crank handle and on ensuring clearance the movement over such point/points may be initiated.
AXLE COUNTER	During failure of LVCD Axle Counter the station master operating the Block instrument shall ensure complete arrival of the last train in that section by getting the guards endorsement in the ‘complete arrival register’ or through a competent railway servant deputed for the purpose. After confirming the complete arrival of the last train over the section the SM on duty shall send

	train out of section report to the station in rear supported by a private number and shall advise the station master at the other end of the section to go far resetting of 'LVCD' Axle counter in conjunction as per the procedure given in Appendix 'B'.
BLOCK INSTRUMENTS	In the event of partial/total failure of block instrument the concerned block instrument shall be suspended till its rectification and trains shall work as per GR. [Refer SR 6.02.03 & 6.02.06) During this period of time the authority will be T/369(3b) with identification number and Private Number/PLCTas the case may be.
RECEPTION OF TRAIN ON OBSTRUCTED LINE	Whenever trains are to be admitted on blocked line it is necessary that the train is Piloted In by a written authority T/509 given by the SM on duty and delivered by a competent Railway servant to the Loco Pilot of the train. Calling on signal may be taken OFF. [Refer GR 5.09 & SRs there to].
RECEPTION OF A TRAIN ON NON-SIGNALLED LINE	During failure of track circuit of berthing portion of the line, clearance of line must be verified physically before initiating piloting 'IN' or 'OUT' as the case may be. The responsibility of verification of the clearance of the track circuit zones lies with the SM on duty operating the VDU.
DEFECTIVE SIGNALS:	When Signals become defective, the procedure laid down in GR 3.68 to 3.81, 9.12 to 9.14 and SR thereto shall be followed.
DEFECTIVE INTERLOCKING:	When interlocking becomes defective, the Station Master on duty shall be responsible to personally supervise the setting, clamping and padlocking of all required facing and trailing points with crank handle points for admission of all trains vide SR 3.69.03(c).
DEFECTIVE/DAMAGED POINTS	When points become defective, the signals controlling these points shall be considered as defective and vice-versa and action taken as mentioned in Appendix B.

6.9 PROVISIONS FOR WORKING OF TROLLIES/ MOTOR TROLLIES/MATERIAL LORRIES ETC.

Motor trolleys are to run in accordance with rules laid down in GR 15.25 & SR there to and BWM 5.39, 5.40, 5.41, 6.11, 6.12, 6.13 & 7.11. Material lorries will Work in accordance with SR (Refer SR 15.27)

- (i) Trolleys, Motor trolleys, Lorries which are not insulated shall not be allowed to run except on Line clear.
- (ii) Motor trolleys / Tower wagon / material lorries are not likely to actuate the axle counter Correctly.
- (iii) In all other respects the Working of a light motor trolley shall confirm to the rules laid down for Ordinary trolleys while running without block protection and to those

laid down for motor Trolleys while running under block protection or following another light motor trolley.

7. **BLOCKING OF THE LINES:**

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

A clear remark in 'RED' ink shall be made immediately in the train signal register and a record shall be made in the Station Master's diary also. Stable load register is also to be maintained. The stable load or loose vehicles are to be secured to prevent rolling down of vehicles. [Refer SR 3.36.3(b), GR 5.23 and SR5.23.01]

A. SECURING OF VEHICLES: -

As far as practical, loose vehicle shall not be allowed to stand on the running line. However under unavoidable circumstances, if it is necessary to detach vehicle from a train or to stable a train and leave them standing on the running line, the SM on duty shall be responsible to secure the vehicle/stable loads to prevent rolling down of vehicles and arrest obstruction and fouling.

NOTE: Special care should be taken to secure special type vehicles fitted with roller bearing while standing in siding or in running lines. [Refer GR 5.23 & SR 5.23.01]

B. ALTERATION OF POINTS TO A CLEAR LINE WHENEVER A RUNNING LINE IS BLOCKED:

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

If all the lines at a station happen to be blocked when 'Line clear' has been granted to a train, the points should be set for the line occupied by a stable load or a goods train in that order, so that in case of any mishap the chances of casualties. While doing so points may be set for a loop occupied by a train, if any, whose engine is facing the direction of approach of the incoming train rather than for a loop occupied by a train whose passenger coach will in case of collision receive the impact. (Refer G&SR 3.51.06)

C. LOADING AND UNLOADING OF VEHICLES ON RUNNING LINES :

Except small loading and unloading of vehicles on running line is prohibited unless permitted by DOM vide SR 5.19.01.

(8) SHUNTING:-**GENERAL PRECAUTIONS:**

Shunting will be carried out at the station in accordance with General Rule and relevant Subsidiary Rules and Block working Manual [Refer GR 3.46, 3.52 to 3.56, 5.13 to 5.20, 8.09, 8.10, 8.12, 8.14 & 8.15]. The SS/SM on duty is authorized to supervise shunting operation. Normally shunt, back shunt, shunt below starters and intermediate starter signals shall be used for shunting operations. The official supervising the shunting shall ensure the correct setting, clamping and padlocking of points in case of Non-Signaled movements.

The SS/SM on duty and the official supervising shunting shall cooperate with each other regarding shunting operations. Neither reception signals nor departure signals shall be taken 'OFF' unless the shunting is isolated and the path of incoming or outgoing train is free from obstructions.

NOTE:

1. Shunting towards automatic block system refer GR 5.13, 5.14, 5.16 to 5.23 with SR there to and refer BWM 7.07 and 7.08.
2. For any non-signaled movement physical verification of the clearance of the crossover points shall be ensured by the Train Manager/SM on duty for supervising shunting operations.

A) SHUNTING IN FACE OF AN APPROACHING TRAIN:

Shunting in the face of an approach train is strictly prohibited.

B) PROHIBITION OF SHUNTING, SPECIAL FEATURES IF ANY:

- (a) Whenever line clear is granted for UP trains on double line section any movement/shunting in the direction of single line section at VDPD end/or in face of approaching train is prohibited.
- (b) Hand shunting is prohibited at both ends of the yard.
- (c) Fly shunting is prohibited.
- (d) Shunting in face of an approaching train is prohibited.

C) SHUNTING ON SINGLE LINE UNDER ABSOLUTE BLOCK SYSTEM:

- i) Within Station section: Shunting within the station section shall be governed by GR 8.09 & 8.10.
- ii) Between last stop signal and opposite first stop signal shall be governed by GR 8.13.
- iii) Beyond opposite first stop signal shall be governed GR 8.13, BWM 3.15 & 5.38.
- iv) During failure of Block Instrument: Block message shall be exchanged between SM at either end of the section with is intended to be obstructed supported by P.No.. Both the SMs shall fix line block collars on respective block Instruments and shall continue shunting provided the Block section is clear.

D) SHUNTING ON DOUBLE LINE UNDER ABSOLUTE BLOCK SYSTEM:

a)	Block back	The procedure of Block Back given in BWM 3.21 & 6.15 shall be followed
b)	Block Forward	GR 8.05 and SRs there to and BWM 3.21 & 6.15 shall be followed.
c)	Up to IBS	GR 8.06(3) shall be followed
d)	Beyond the IBS	NIL
e)	During failure of Block Instrument	Shunting in the block section in advance/in rear shall not be performed unless the section is clear of all obstructions and the block section is Blocked back/Blocked forward as the case may be. SM shall fix the line block collars on respective Block Instrument.

E) SHUNTING ON DOUBLE LINE UNDER AUTOMATIC BLOCK SYSTEM:

- (a) When line clear has been given, no shunting shall be permitted in the block section rear vide GR. 8.05(2).
- (b) Shunting or obstruction for any other purpose shall not be permitted in block section in rear unless it is clear and is blocked back.
- (c) Shunting or obstruction for any other purpose shall not be permitted in block section in advance unless it is clear and is block forward vide GR 8.06.(3).
- (d) Refer block working manual 7.07 and 7.08 for shunting towards automatic block section.

F) SHUNTING WITHIN STATION SECTION :

If necessary signals are kept at “ON”, shunting may be carried on within the station section but this shall be done only when there is no approaching train since shunting in the face of an approaching train is prohibited at this station.

G) AUTHORITY FOR SHUNTING OPERATIONS:

Shunt Signals are provided for shunting purpose. If Shunt signals fails or shunting have to perform at location where shunt signals not provided SM on duty shall issue written shunting authority on form T/806 to the Loco Pilot through Train Manager of the train. In T/806, it is required to mention clearly the limits up to which shunting is permitted as also the lines, occupied in shunting. The relevant provisions of GR 5.14 and SR thereto shall be meticulously followed.

This Memo shall be withdrawn whenever shunting is to be suspended for reception and Dispatch of train if the line on which shunting is performed is

not isolated. After Shunting is completed the order shall be collected from the loco pilot cancelled and Pasted with the record foil as per SR 5.13.02.

(9) ABNORMAL CONDITIONS:

- | |
|---|
| (a) The rules to be observed in the event of abnormal conditions in Automatic block section: |
|---|

i) During failure of all or series of signals in the Automatic Block System (Double Line) likely to last for some time and cause serious delay while means of communications are available.	Refer G&SR 9.12.01.
ii) During Failure of all signals likely to last for some time and cause serious delay when no means of communications are available.	Refer G &SR 9.12.02.
iii) Working of trains under Automatic Block System (Double Line) during obstruction of one line when signals are operative and communications are available.	Refer G&SR 9.12.03.
iv) Procedure for working trains under Automatic Block system (Double Line) during obstruction of one line when no means of communication are available.	Refer G &SR 9.12.04
v) Working of trains under Automatic Block System (Double Line) during failure of the means of communication when signals are operative.	Refer G & SR 9.12.05
vi) Working of trains on the obstructed line in case of obstruction or accident in automatic block signaling section.	Refer G & SR 9.12.08.
vi) Failure of axle counter of Automatic block section	Refer Para No. 12 of Appendix B
viii) Procedure when semi-automatic stop signal is 'ON'.-	Refer GR 9.14 and SR there to
ix) Failure of MTRC	NIL
(b) The rules to be observed in the event of abnormal conditions in absolute Block system.	
i) During partial interruption / failure of electrical communications instrument.	During partial interruption of communications trains shall be worked in accordance with BWM 5.16 & 5.23 &SR 6.02.06.
ii) The Authority to proceed in to the occupied block section in case obstruction of line or accident etc.	Whenever it becomes necessary to send a train into the block station already occupied by another train or due to accident, trains shall be worked in accordance with SR 6.02.05. The authority to proceed shall be block ticket (i.e., T/A- 602) as per SR 6.02.05.

iii) Total Failure of communication	In the event of total failure of all communications, trains shall be worked in accordance with provisions of SR 6.02.03 in double Line. During Partial interruption of communications the Rules to be followed as per SR 6.02.06.
iv) TSL working	GR 6.01 and SR 6.02.01 shall be followed.
v) Dispatch of trains under authority to proceed without Line clear to assist crippled train	Rules and regulations for working trains on an obstructed line in case of obstruction or accident on the authority of block ticket (T/A-602) when communications are available shall be followed in accordance with the provisions of SR 6.02.05.
vi) Trains delayed in block section.	When a train carrying passenger does not arrive within '10' minutes or a goods train within 20 minutes after allowing for its normal running time from the station in rear the Station Master at the station in advance shall immediately advise the station in rear and the Section Controller on duty of this fact. The procedure laid down in GR 6.04 and SR thereto shall be followed.
vii) Failure of axle counter block / BPAC:	Refer Para No.9 in Appendix 'B' of this SWR to be followed.

(c). Procedure for emergency operation of Points :

- i) The detailed procedure for emergency crank handle operation of motor operated points are mentioned in Para No. 5.3, 6 & 7 of Appendix 'B'.
- ii) Procedure for Emergency operation of point with axle counter/track circuit failure are mentioned in Para No. 5.2 of Appendix 'B'.

(d) Certification of clearance of track before "calling on signal" operation is initiated:

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 to be verified by SM.

(e) Reporting failure of points, Track circuits / Axle counters and interlocking:

- i) Whenever there is a failure of points, track circuits / axle counters or any other interlocking gear at the station the failure should be reported by SM on duty to the concerned signal maintenance staff on duty responsible for attending the failure and

- only after receipt of the written memo from the Signaling Maintainer for rectification of the fault, SM should restore the normal working.
- ii) The entries in failure register to be done with message to the Section Controller.

(10) VISIBILITY TEST OBJECT

The signal lights of starter signal No.15 and DN Starter signal No.28 of Line No.1 are earmarked to serve as visibility test objects (VTO) during Day and Night vide GR 3.61(2)(b)(iii).

(11) ESSENTIAL EQUIPMENT AT THE STATION

Details are given in Appendix 'E'.

(12) FOG SIGNAL MEN NOMINATED TO BE CALLED IN CASE OF FOG

- i) During thick, foggy or tempestuous, dust storm weather etc, when the visibility of the signal is impaired, the SM on duty shall initiate action to depute Fog Signalmen with sufficient Detonators Vide GR 3.61 in order to indicate the location of the station approach signals to the driver of an approaching train.
- ii) The Fog Signalmen shall be proceed to the first stop signal of the station and place one detonators at a distance of 270M from the first stop signal towards the approaching train and another detonator at a distance of 10M from the first one and he shall stand 45M away from the detonator.
- iii) On single line section the Fog signal man shall show a proceed hand signal to the outgoing train. The detailed procedure laid down in GR 3.61 with SR there to shall be followed.
- iv) The Fog signal men shall be permanent employees, no temporary or casual labor shall be deployed as Fog signal man.
- v) The assurance of Fog signal man available at the station (including Engineering Branch if available) shall be obtained in the fog signal register every year in the month of 'October'.
- vi) Details of supply of detonators, available stock, use, and testing etc. shall be maintained in the fog signal register maintained at the station as per GR 3.64 and SR there to.

NOTE:

1. Names of Fog Signal men available at the station shall be exhibited in the SM's office.
2. Placing of detonators during foggy weather is dispensed with since the station is equipped with the provision of double distant territory between DVD-THY and Automatic signaling territory between DVD-GPT section vide SR 3.61.01 (a), Note (i) and (ii) respectively.

LIST OF APPENDICES		
APPENDIX-A	:	WORKING OF LEVEL CROSSING GATES
APPENDIX-B	:	SYSTEM OF SIGNALLING AND INTERLOCKING AND

		COMMUNICATION ARRANGEMENTS AT THE STATION.
APPENDIX-C	:	ANTI COLLISION DEVICE (RAKSHA KAVACH)
APPENDIX-D	:	DUTIES OF TRAIN PASSING STAFF IN EACH SHIFT
APPENDIX-E	:	LIST OF ESSENTIAL EQUIPMENTS PROVIDED AT THE STATION
APPENDIX-F	:	RULES OF WORKING OF DK STATIONS, HALTS, IBH, IBS AND OUTLYING SIDINGS
APPENDIX-G	:	RULES FOR WORKING OF TRAINS IN ELECTRIFIED SECTIONS.

APPENDIX 'A'**WORKING OF LEVEL CROSSING GATE NO: BC-2 AT KM 763/26-28****1. GENERAL****1.1 DESCRIPTION OF THE LEVEL CROSSING GATE:**

Following details shall be maintained at all manned level crossing gates:

1	No. of Level Crossing Gate	:	BC-2
2	Engineering or Traffic gate	:	Engineering Gate
3	Under control of stationmaster or permanent way inspector.	:	SSE (P-WAY)/DVD
4	Location at Km.	:	KM.763/26-28
5	At station	:	Mid Section
6	In between station	:	DVD-GPT (DN Line)
7	BG/MG/NG	:	BG
8	Single line/double line/multiple line	:	Single Line
9	Normal position	:	Open to Road Traffic
10	Interlocked/Non-Interlocked	:	Interlocked
11	Means of Interlocking	:	Electrical Lifting Barrier
12	Provision of gate signal at Km.	:	DNLine:763/26-28
13	Signaling arrangement	:	Provided
14	Means of communication Telephone.	:	Telephone connected with DVD Station
15	Width of the level crossing gate	:	5.20M
16	Type of road	:	Others
17	Name of road	:	Kapu-jaggarajupeta
18	Metalled/Non-Metalled	:	Metalled
19	Approach road	:	Metalled
20	Width of the road	:	5.10M
21	Angle of road crossing(in case of the SKEW gates)	:	90 ⁰
22	Road gradients (if any)	:	a. North/EastSide:Level b. South/WestSide:Level
23	Road alignment(straight/Curve)	:	a. North/Eastside: Straight b. South/East Side: Straight
24	Provision of height gauges	:	Provided
25	Type of barriers	:	Lifting Barriers
26	Length of checkrails	:	7.2M
27	Road surface in between level Crossing gates.	:	Level
28	Length of rumble strip/ speed Breakers.	:	5.2M
29	Road signs	:	Provided
30	Speed breakers indication board	:	Provided

31	TVU:	:	1,79,776
32	Census next due on	:	25.10.2024
33	Demarcation for placement of Detonators.	:	Provided
34	No.of gateman working	:	Three
35	Nearest Railway Medical Assistance	:	Rly.HealthUnit/VDPD
36	Nearest Private Medical Assistance available(if any)	:	PHKurmannapalam
37	List of equipment available(Yes/No)	:	Yes

1.2 EQUIPMENTS:

S.No	ITEMS	QUANTITY/NUMBERS
1	LED based flashing Tri-Color Hand Signal Lamp	3 No's
2	Hand Signal Flag Green	1 with mounted stick
3	Hand Signal Flag Red	3No's
4	Banner Flag Red	3No's
5	Posts for exhibiting red banner flag	2 No's
6	Spare chains with padlocks	2 with top mark
7	Detonators	10intincase
8	Gate lamps	1No
9	Tommy Bar	2No's
10	Mortan Pan	1 No
11	Spade/Fowarh	1 No
12	Rammer	1 No
13	Pick Axe	1 No
14	Tin case for flags	1 No
15	Can for Oil	1 No
16	Water Pot/Bucket	1 No
17	Canister for Muster Roll	1 No
18	Set of spare spectacles of gateman wearing glasses.	1 No
19	Board demarcation protection of level crossing gate diagram in case of obstruction.	1 No
20	Bucket	1 No
21	Whistle	1 No
21	Wall Clock	1No
23	A small size chain for use in case of failure of Gate Boom.	2No

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

1.4 MODE OF OPERATION:

- i. After the gate is closed and locked then key 'A' is extracted from EKT-1.
- ii. Key 'A' thus extracted is inserted in EKT-2 and turned 'KEY-IN' contact of EKT-2 along with switch 'GS2' reversed will clear down gate semi automatic signal No. GA763/22.
- iii. In case of emergency gateman will inform SM/DVD with PN number exchange, then KEY 'B' (Chained with crank handling) to be extracted from EKT-3(Electro-Mechanically Free). Provided at Gate Lodge (in Locked & Sealed red box with glass cover) for manual operation of lifting barriers by crank handling.
- iv. Extraction of Key-B shall put back the gate signal no. GA-763/22 to 'ON'.
- v. Approach locking of 120 seconds with back locking is provided on 'Key-A' with EKT-2 for DN line.
- vi. For DN line, approach warning for Gateman, audible warning & visual warning for road traffic is provided which is actuated from a distance of 2KM(min) in rear of DN gate stop signal.

1.5 DUTIES OF GATEMAN:

I. 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.

II. POSITION DURING PASSAGE OF TRAINS:

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

- i) Gateman will stand alternatively 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 nighttime, gateman shall hold lighted hand signal with white light facing the track.
- iv) He shall keep the whistles lung around his neck from a cord.

III. ROUTINE DUTIES OF GATEMAN:

- i) Gateman shall ensure that red flag is placed across the track whenever the gate is kept in open condition for passage of road vehicles.
- ii) Gateman shall ensure that gate lamps 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, it is necessary to leave the gate in an emergency, he must close 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, and vehicle / wagons / train / 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) Gateman shall also prepare to repeat any signal which guard may give to Loco Pilot on walkie-talkie or in any other way.
- vii) If lifting barriers get damaged or becomes out of order, the gateman shall use the spare chain with disc and padlocks for securing the gate against road traffic.
- viii) Gateman shall report to the nearest Station Master, Gang mate or SSE (P Way) any defect in his gate or apparatus pertaining to it, as soon as possible.
- ix) 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.
- x) Gateman shall wear badge and prescribed uniform while on-duty at level crossing

gate.

- xi) Gateman shall ensure that he is having competency certificate in his possession while on duty.
- xii) Gateman shall work the gate as per Gate Working Instructions and remain well conversant with these instructions.
- xiii) Gateman shall ensure that equipment supplied at the gate is in good order and ready for immediate use.
- xiv) Gateman shall see that the channel for the flange of the wheel is kept clean.
- xv) Gateman shall keep the road surface well watered and rammed in case of un-metalled roads.
- xvi) Gateman on electrified section shall watch that road vehicles / animals passing from gate are within the height loading gauge provided on either side of the level crossing gate.
- xvii) Gateman shall prevent tress passing by persons or cattle to the maximum extent.

1.6 ACTION IN CASE OF UNUSUAL OCCURRENCE ON TRAIN:

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

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

1.7 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.
- 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.

The gateman shall protect the line as under:-

- a) On single line section:
 - i) Gateman shall plant a red banner flag by day and a red light by night 5 meters away on posts duly provided for the purpose. He shall first protect the direction from which a train is expected to arrive first.
 - ii) Then he will similarly plant the other red banner flag by day and red light by night towards the other direction 5 meters away from the site of obstruction.
 - iii) Gateman shall then proceed to protect the gate along with detonators, fuses and red flag by day and red hand signal lamp by night.
 - iv) Gateman shall proceed exhibiting red flag by day and red hand signal lamp by night towards the direction from which a train is expected to arrive first, to a point 600 meters and place one detonator on the line. Thereafter he shall proceed to a distance 1200 meters from the level crossing gate and place 3 detonators on the track 10 meters apart. Having thus protected the line he shall return to the level crossing gate picking up the intermediate detonator on his way back.
 - v) Thereafter, he shall proceed towards the other direction, showing red hand signal, similarly place detonators as described in para (iv) above and return to the site of obstruction, picking up the intermediate detonator on his way back.
 - vi) Having returned to the gate, he must then take steps to remove the obstruction and warn the Loco Pilot of the approaching train.
 - vii) In case the gateman observes or hears a train approaching when he is still on his way to protect and before he reaches the stipulated distance to place detonators, he shall place detonators on the line at a distance as far away as he can go.
 - 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 paras (a) and (b) above.
 - ii) If the gate is broken by a road vehicle which is fouling the track, or if lifting barriers or any other part of the gate foul the track, or if there is any other obstruction at the gate, the gateman shall take immediate action.
 - iii) He shall note down the particulars of the road vehicle, vehicle number, name of the driver, owner and relay these details to the nearest Station Master or SSE(P-Way) regarding the particulars and obstructions at the level crossing gate, through messenger or through means available.
- 1.8 Exchange of Private Numbers:
- i) Immediately after departure of the train, Station Master shall advise the gateman through telephone connected at his end, the number, description, direction and expected time of passage of the train at the gate.
 - ii) If the telephone is connected to the station at the receiving end, this 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.

1.9 Failure of Telephonic Communication:

When Telephonic Communication 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 falls at the gate connected with the station at the dispatching end, Station Master shall issue a caution order to the Loco Pilot of the departing train.
- ii) Station Master shall advise the Loco Pilot to whistle continuously and proceed cautiously while approaching the gate.
- iii) 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.
- 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 will also advise the gateman through Gangman / Patrolman /Loco Pilot of the first train that the telephone has become defective.
- vii) Station Master should also advise S&T staff responsible for maintenance of the telephone to rectify the same at the earliest.
- viii) Normal working will be resumed only after S&T staff rectify the telephone and issue reconnection / fit memo for the same.

1.10 Failure of Lifting Barriers :

- i) When the gate cannot be closed due to failure of lifting barriers, the gateman shall immediately inform the Station Master on duty under exchange of private number, and ensure that lifting of barriers do not foul the track.
- ii) He shall immediately fix red banner flag by day and red light by night on the post at that end first from which the train is approaching and then at the other end.
- iii) Gateman shall secure that gate against road traffic by means of safety chains and padlocks.
- iv) After securing the gate against road traffic, gateman shall show green hand signal flag by day and green light to the loco pilot of the approaching train.
- v) Station Master on duty shall issue caution order to the loco pilot of a departing train.
- vi) He shall also advise the Station Master at the dispatching end, under exchange of private number; to similarly issue a caution order to the Loco Pilot before dispatching a train in the block section.
- vii) Station Master shall advise maintenance staff responsible for maintaining the lifting barrier to rectify the same at the earliest.
- viii) Normal working will be resumed only after maintenance staff repair the lifting barrier and issue reconnection / fit memo for the same.

1.11 Failure of Gate Key with the gate in closed position, when Gate Key cannot be extracted for opening the gate:

- i) If the gate key cannot be extracted from the winch, gate signal lever or key transmitter then gateman must immediately inform the Station Master on duty on telephone, under exchange of private number.
- ii) If Emergency Key is available at the gate lodge, Gateman will take it out from the sealed box by breaking the seal and open the gate for road traffic.
- iii) The record of the date and time of breaking the sealed cover of Emergency key Box shall be recorded and signed with reasons.
- iv) Thereafter, the gate must be treated as non-interlocked and procedure for reception / dispatch of trains as prescribed for non-interlocked gates should be adopted.
- v) Station Master on duty shall issue caution order to the Loco pilot of a departing train.
- vi) He shall also advise the Station Master at the dispatching end, under exchange of private number, to similarly issue a caution order to the Loco Pilot before dispatching a train in the block section from his end.
- vii) Station Master shall advise S&T staff responsible for maintaining the key transmitter to repair the same at the earliest.
- viii) Normal working will be resumed only after S&T staff repair the key transmitter and issue reconnection / fit memo for the same.
- ix) After rectification, the Emergency key shall be replaced in the Emergency Key Box and resealed by the S&T maintainer.

1.12 Failure of the Gate Key with the gate in open condition:

- i) If the gate key cannot be extracted from the winch, gate signal lever or key transmitter then gateman must immediately inform the Station Master on duty on telephone, under exchange of private number.
- ii) Thereafter, the gate must be treated as non-interlocked and procedure for reception / dispatch of trains as prescribed for non-interlocked gates should be adopted.
- iii) The gateman shall secure the gate against road traffic by means of chains and padlocks and pass trains on hand signals.
- iv) Station Master on duty shall issue a caution order to the Loco Pilot of a departing train.
- v) He shall also advise the Station Master at the dispatching end, under exchange of private number to similarly issue a caution order to the Loco Pilot before dispatching a train in the block section from his end.
- vi) Station Master shall advise S&T staff responsible for maintaining the key transmitter to repair the same at the earliest.
- vii) Normal working will be resumed only after S&T staff repair the key transmitter and issue reconnection / fit memo for the same.
- viii) After rectification, the Emergency key shall be replaced in the Emergency Key Box and resealed by the S&T maintainer.

1.13 Defective Gate Signals:

- i) The gateman shall treat the gate as defective and must not lower them under following circumstances:
 - a) If gate signals can be taken 'OFF' without closing the gate, or

- b) The key can be extracted from the operation winch when the gate is in open condition, or
 - c) The key can be extracted from the gate barrier when the gate is in open condition.
- ii) If the Gate or Signal becomes defective in 'OFF' position, the gateman will make all efforts to put it at 'ON' position.
 - a. The gateman will immediately advise the Station Master on duty, under exchange of private number, regarding defective gate signals.
 - b. Thereafter, the gate must be treated as non-interlocked and procedure for reception / dispatch as prescribed for non-interlocked gates should be adopted.
 - c. He shall show green hand signal flag by day and green light by night to the passing train after closing the gate.
 - d. Station Master on duty will issue a caution order to the Loco Pilot of a departing train.
 - e. He shall also advise the Station Master at the dispatching end, under exchange of private number, to similarly issue a caution order to the Loco Pilot before dispatching a train in the block section from his end.
 - f. Station Master shall advise S&T staff responsible for maintaining the gate signal to repair the same at the earliest.
 - g. Normal working will be resumed only after S&T staff rectify the defective gate signal and issue reconnection / fit memo for the same.

1.14 Obstruction at the Gate:

- i) If the gate is broken by road vehicle which is fouling the track, or if lifting barriers or any other part of the gate foul the track, or if there is any other obstruction at the gate, the gateman shall immediately put back gate signals to 'ON' position.
- ii) He shall fix red 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 gateman 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 first protect the gate and then inform on phone.
- v) Gateman shall then rush with detonators 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 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.
- 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 gate signal at 'ON' position on green hand signal of the gateman, of the gate is broken, but is clear of any obstruction.
- xi) 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 to repair the same at the earliest.
- xiii) Normal working will be resumed only after maintenance staff rectifies the defective lifting barriers and issue reconnection / fit memo for the same.

1.15 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, the gateman and Station Master 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.

APPENDIX 'B'

SYSTEM OF SIGNALLING INTERLOCKING AND TELECOMMUNICATIONS

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

1. BRIEF DESCRIPTION OF THE SIGNALLING AND INTERLOCKING INSTALLATIONS:

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

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

The Operator Console cum Visual Display Unit (VDU) in dual configuration is provided for operation of Signals, points, Crank handles and controls etc. A mimic yard diagram based on SI plan no. SI/23243 shall be displayed on the VDU. The VDU is used for controlling and monitoring the station. Indications on the station mimic diagram of VDU will be dynamically updated.

3. SYSTEM OVERVIEW

The PC-based operator VDU for the operation of Signals, Points, Crank Handles and Siding Controls, etc is provided. The SM of a station required to be familiar on the specific station's SWR (station working rules).

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

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

3.1. DUAL VDUs – MODE OF SELECTION:

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

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

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

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

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

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

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

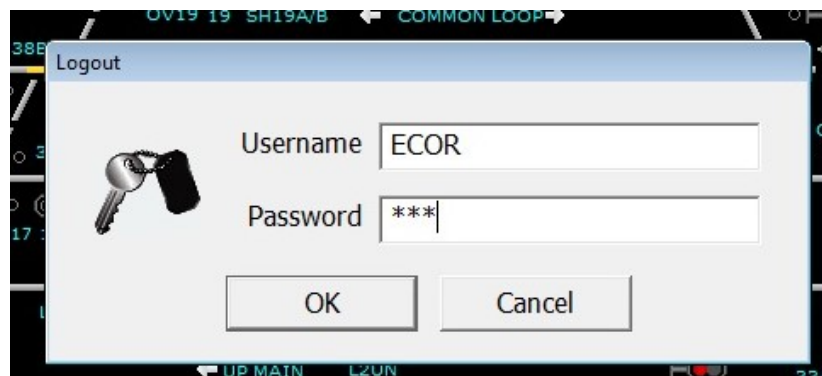
SN	ICONS	INDICATIONS	FUNCTIONS	REMARKS
5.	Signal failure Ack. button	Red	Flashing indication appears when any signal fails. SM has to left click on the icon to acknowledge.	Buzzer will sound On ack, buzzer stops. Inform S&T staff immediately if failure persists.
6.	CH-1, CH-2, CH-3, CH-4, --- buttons	Yellow lamp indicates 'KEY IN'. Red lamp indicates 'CH LOCKED'	In normal condition yellow lamp will be lit. Whenever the crank handle is locked in route or otherwise red indication will glow.	
7.	UP Block Release button	Yellow – Prepared for Block release.	On getting indication SM shall left click on the button icon which shall release Block Handle.	After complete arrival of train this will be activated
8.	DN Block Release button	Yellow – Prepared for Block release.	On getting indication SM shall left click on the button icon which shall release Block Handle.	After complete arrival of train this will be activated
9.	Line Block button	Red when blocked	SS/SM shall point the curser on the icons provided on the berthing track and right click. One drop menu will appear indicating line blocked and un-blocked, SS/SM has to select the required menu.	When line block is selected the concerned button on the particular line turns to RED.
10.	Permission received from Thadi ack. button	Yellow permission received.	To acknowledge SS/SM has to left click on the ack Button.	--
11.	Permission granted to Thadi ack. button	Yellow permission granted.	To grant permission for resetting. SS/SM has to left click on the permission granting button.	--
12.	DN train run away in IB section muting button (section DVD-THY)	Yellow— acknowledged.	On getting Alarm/Buzzer, SS/SM has to left click on the button icon to acknowledge the inside	--

4.2. PC SM KEY:

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



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



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



VDU Control Changeover Operation:

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

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

4.3. ELECTRONIC INTERLOCKING (E.I) SYSTEM INDICATIONS:

4.3.1. K5BMC System Failure Indications:

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

a) ET LFL (Electronic Terminal Low Failure):

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

b) ET HFL (Electronic Terminal High Failure):

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

c) EI LFL (EI System Low Failure):

ET LINE2B status for two systems, Logic system Power Supply status, I/O Board & LINE2B Board Power Supply, OPC Converter Status & OPC Communication status for both the systems is monitored through EI LFL.

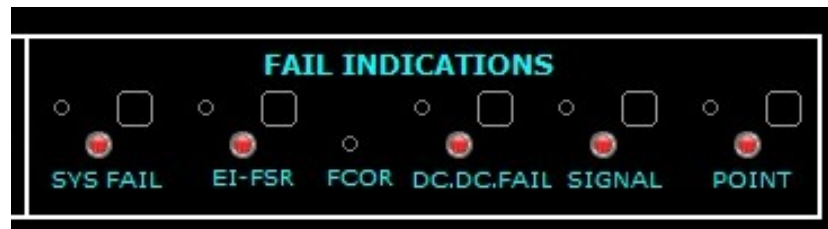
When any one of the above functions fail list will be displayed in EI LFL by a flashing red indication.

d) EIHFL (EI System High Failure):

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

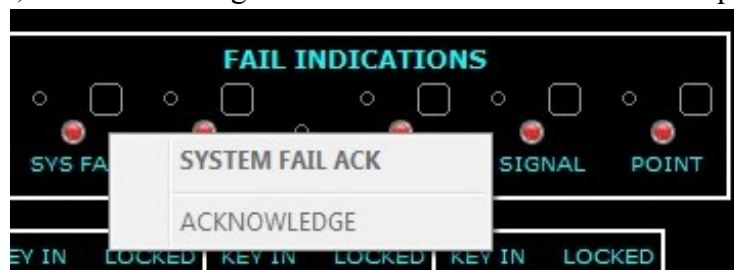
When any one of the above function fails it will be displayed in EI HFL by a flashing red indication.

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



e) System failure Acknowledgement:

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



f) K5BMC System Healthy Indications:

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

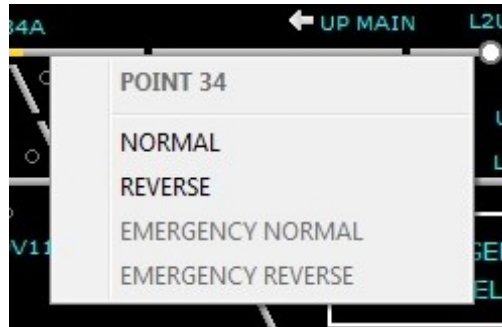


4.4. VDU ACTIVE INDICATIONS:

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

4.5. OPERATION AND INDICATION OF POINT:

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



4.5.1. REVERSE TO NORMAL OPERATION:

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

4.5.2. NORMAL TO REVERSE OPERATION:

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

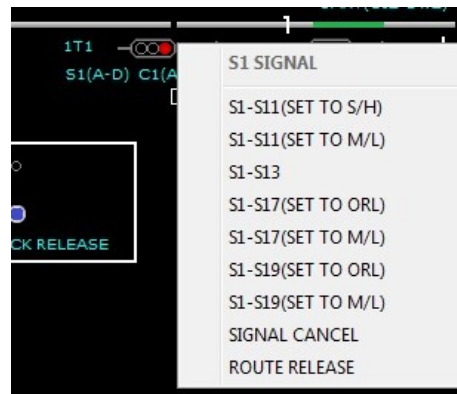
4.5.3. POINT INDICATIONS:

When the point is free a steady yellow strip of light will appear either in the normal portion of point zone (In case of cross over at both ends) or in the reverse portion of point zone depending up on the position of point, indicating that the point is set. When the point is operated from the normal to reverse the strip of light in the normal portion is disappears and

starts flashing in the reverse portion and becomes steady when the point is set and detected. Similarly when the point is operated from the reverse to normal the strip of light in the reverse portion disappears and starts flashing in the normal portion and becomes steady when the point is set and detected. When the point is engaged in a route, a yellow indication will appear near the point and red indication appears in the point lock indication showing that the point is locked and cannot be operated.

4.6. SIGNAL OPERATION:

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



4.6.1. SETTING A ROUTE:

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



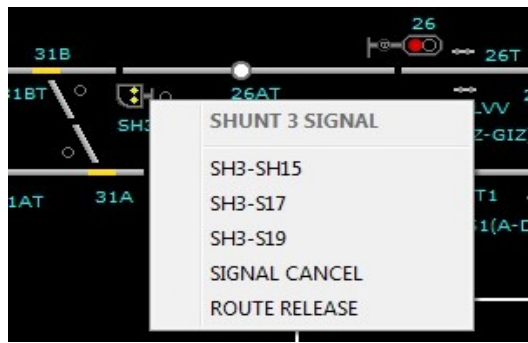
Conditions for setting a route:

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

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

4.6.2. SHUNT SIGNAL OPERATION:

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

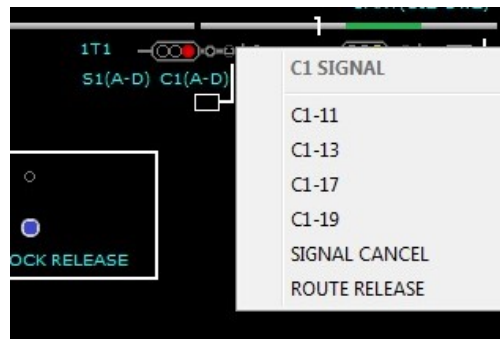


Then click the button of mouse on the required route on pop-up menu. After doing so, desired route will be initiated and the Shunt signal will be taken off.

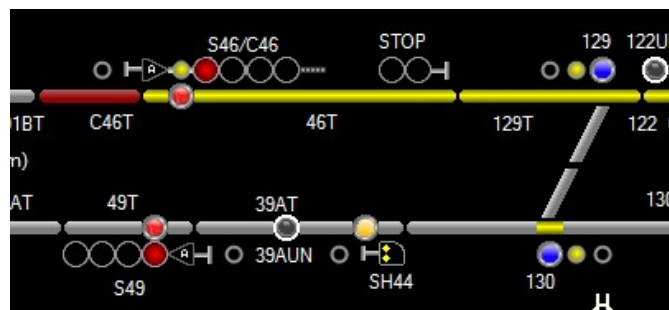
4.6.3. CALLING ON SIGNAL OPERATION:

Calling-on signal route set operation is similar to the same procedure as mentioned for the main signal. For calling-on Signal, route is set after a train occupies the approach track circuit in immediate rear of the stop signal. The calling on Signal below Home Signal/Intermediate Home Signal is cleared after a lapse of 60 Seconds provided other conditions are fulfilled. The calling on signal below starter Signal is cleared immediately on occupation of approach track circuit in immediate rear of the Starter Signal.

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



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



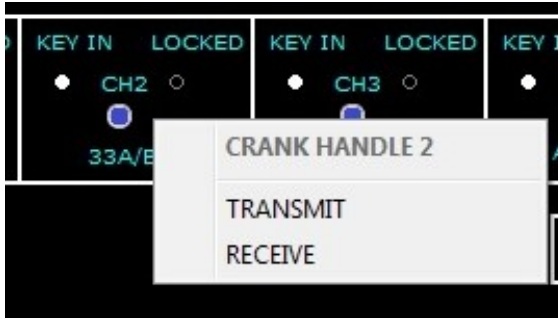
This action will be recorded in a respective counter of the counter box provided on SM's table. Every such operation shall be recorded by the SS/SM on duty along with the reasons to do so. The calling-on signal route can be released after complete arrival of the train by Signal cancellation only.

4.7. CRANK HANDLE CONTROL OPERATION:

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



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



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

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

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

4.8. OVERLAP TIME RELEASE:

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

5. EMERGENCY OPERATIONS:

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

5.1. CANCELLING A ROUTE/ EMERGENCY ROUTE RELEASE:

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

5.2. EMERGENCY POINT OPERATION:

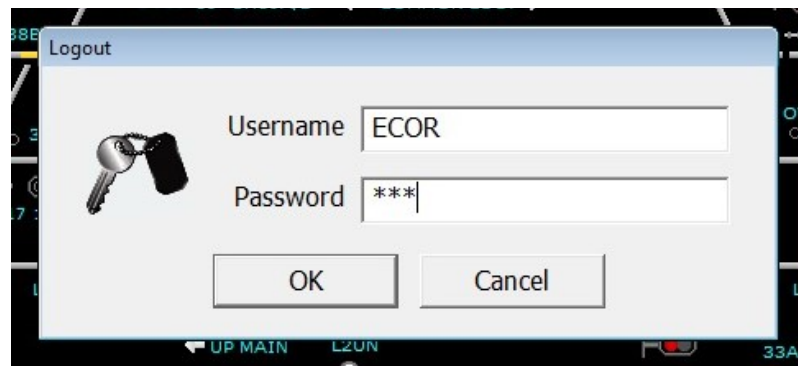
When the point zone track circuits failed without any point lock condition through respective signal route(s), a point can be operated by the Emergency Point operation.

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

Before doing the emergency operation, SM on duty shall make the Emergency Point Operation Key is to be 'IN'. To 'KEY IN' the Emergency Point Operation key click on the SM's Emergency point operation key a pop-up menu will be appears as follows.



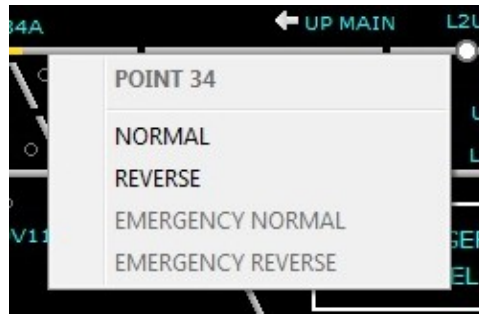
Click on the KEY IN in the menu appeared and shall provide User name and password for the same as follows.



The user name of this station is 'ECOR' and password of this station is DVD. Then point operation can be done to either normal or reverse as per requirement.

5.2.1. EMERGENCY NORMAL OPERATION:

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



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

5.2.2. EMERGENCY REVERSE OPERATION:

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

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

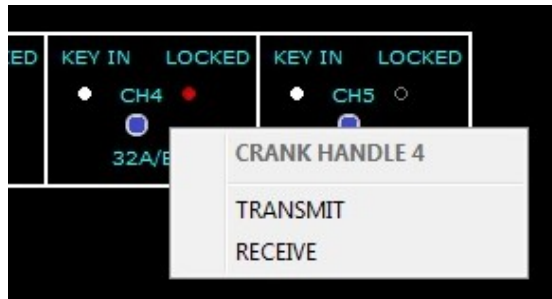
After the completion of the Emergency point operation, the Key to be 'KEY OUT'. Same procedure as mentioned for KEY IN shall be followed for KEY OUT. To 'KEY OUT' the Emergency Point Operation key right click on the SM's Emergency point operation key a pop-up menu will be appears as shown in the Para No.5.2 above. Click on the KEY OUT in the menu appeared and shall provide User name and password. The user name of this station is 'ECOR' and password of this station is DVD.

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

5.3. EMERGENCY CRANK HANDLE RELEASE OPERATION:

When a crank handle is locked due to route set earlier is not released or otherwise. To Transmit or Release control of the Crank Handle, SM on duty shall cancel the relevant signal first and then click on the crank handle control button icon provided like the following on the

VDU. On clicking, the pop-up menu gives details of the possible commands on the Crank Handle.



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

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

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

When both the VDUs (Active & Stand by) provided for operation of signals & points in EI station cease to work at the same time due to power failure or what so ever the reason, the SM on duty shall turn the key (ECH) to right along with Push button provided in the key box fixed on the SM table. By resorting to this, timer is initiated and flashing indication will appear on the key box fixed on the SM table. Flashing indication will be steady after 120 seconds which results in release of all the crank handles at a time. The SM on duty can set the required point/points through crank handles manually by extracting the key/keys from EKTs provided in the location boxes.

CRANK HANDLE CONTROLS FOR EMERGENCY OPERATION OF POINTS			
S No	CRANK HANDLE	CONTROL POINTS	PROVIDED IN
1.	CH1	102A/B, 104A/B	GOOMTY 1
2.	CH2	103A/B, 105A/B	GOOMTY 1
3.	CH3	109A/B	GOOMTY 2
4.	CH4	114A/B	GOOMTY 2
5.	CH5	116A/B	GOOMTY 2

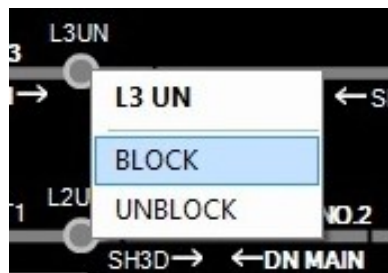
6.	CH6	117A/B	GOOMTY 2
7.	CH7	122A/B	GOOMTY 3
8.	CH8	124A/B	GOOMTY 3
9.	CH9	126A/B	GOOMTY 3
10.	CH10	128A/B	GOOMTY 3
11.	CH11	125A/B,129A/B	GOOMTY 3 &5
12.	CH12	130A/B	GOOMTY 5

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

When both the EI systems fails to operate due to power failure or whatever the reason, timer is initiated a flashing indication will appear on the Key box fixed on the SM table. Flashing indication will be steady after 120 seconds which results that releases the entire crank handles at a time and the SM on duty can set the required point/ points through crank handles manually by extracting the key/keys from EKTs provided in the location boxes. The signaling staff i.e., JE/SSE/Sig or ESM shall be intimated immediately regarding the failure for rectification of the same.

5.4. BLOCK AND UNBLOCK OPERATION:

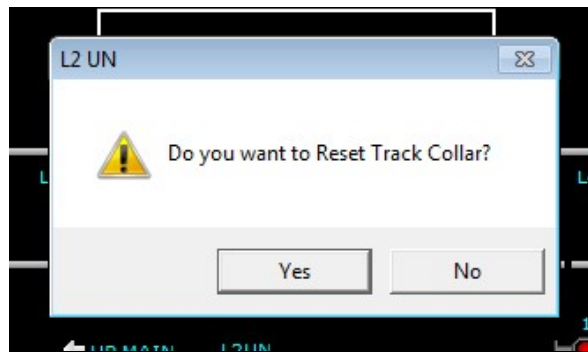
Block option is used to block the Route. Block Operation prohibits the setting of routes, releasing the route, Operation of points by the user. A typical Block & Unblock menu is shown below.



5.4.1. BLOCK OPERATION:

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

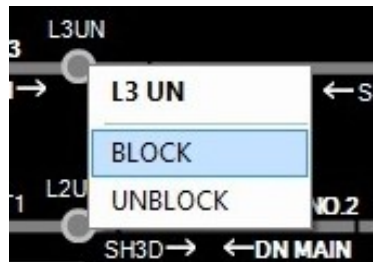
Select the "BLOCK" menu item from the list and press left mouse button or Enter key in the keyboard. A confirmation box appears as shown in below.



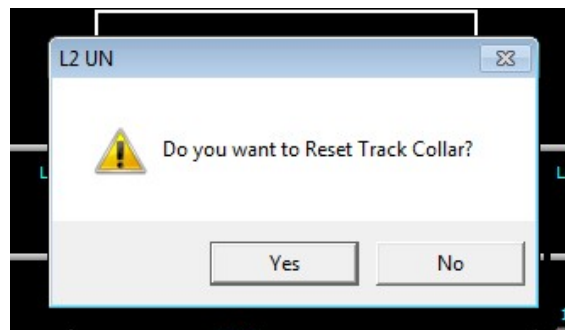
Now click YES option of the confirmation window and a Red Colour Block indication will be displayed.

5.4.2. UNBLOCK OPERATION:

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



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



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

The resetting of the LVCD shall be initiated as mentioned below at both the stations after exchanging the Private Number vide G&SR 4.17, 4.17.01.

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

6.1. RESETTING OPERATION FOR DIGITAL AXLE COUNTERS:

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

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

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

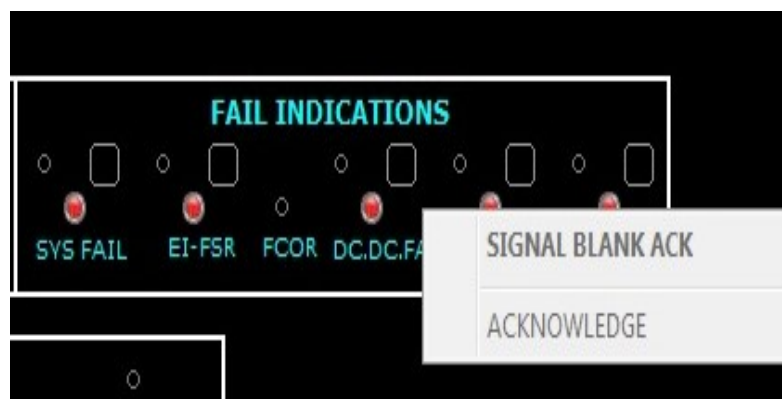
- a) On being advised by SM of sending Station, SM of DVD should perform the following step by step procedure from (b) to (i) for resetting the Digital Axle Counter.
- b) SM of DVD Station shall then Insert SM's reset key, and turn right.
- c) Press simultaneously both the Push button and the Reset Key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

6.2. RESETTING OPERATION OF IB AXT:

The detailed procedure for Resetting of IB Axle Counter is mentioned in the APPENDIX-‘F’ of this SWR.

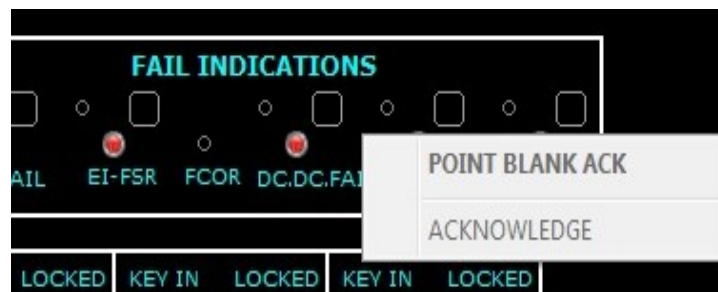
7. SIGNAL LAMP FAILURE INDICATION AND BUZZER ACKNOWLEDGMENT:

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



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

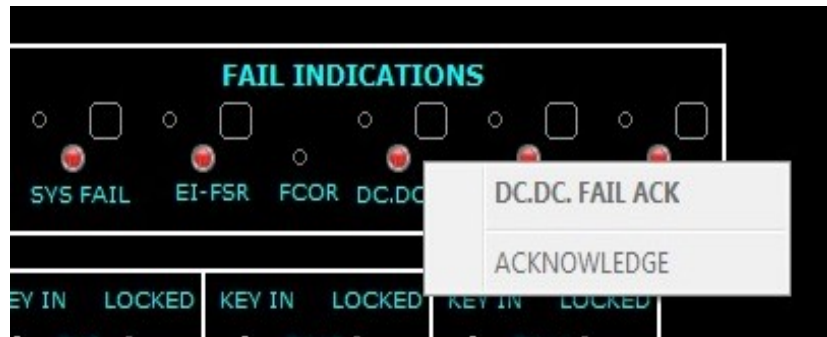
Whenever there is a failure of point due to non-setting, point failure indication flashing light appears near the point button icon along with point failure Buzzer. The buzzer stops when the point failure acknowledgement button icon is pressed, but the flashing light above the ACK button shall continue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



9. POWER FAILURE INDICATION AND BUZZER ACKNOWLEDGEMENT:

The DC-DC Converter failure indication will flash & relevant buzzer sounds whenever a power failure is noticed.

The power failure buzzer will be muted once the relevant acknowledgement button has pressed and the flashing indication is continued in the VDU till the problem is rectified.



10. KEY BOARD OPERATIONS:

Essentially, "Keyboard Backup operation" is an alternative to the mouse operation. In the event of mouse absence or failure of mouse, the user is still able to operate the VDU using the Keyboard shortcut keys.

The "Keyboard backup" group has three buttons on the toolbar:-

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

Signal KB Operation

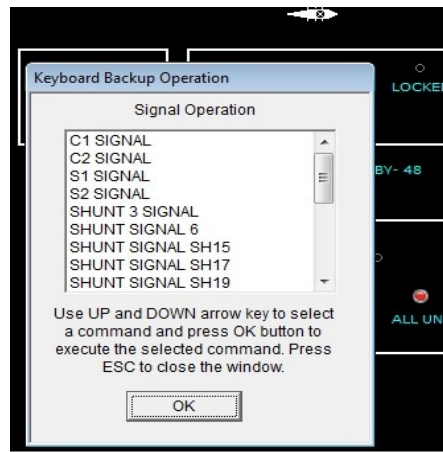


Misc KB Operation

Point KB Operation

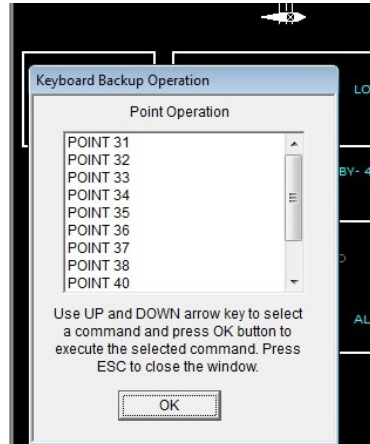
10.1. SIGNAL KEY BOARD OPERATION:

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



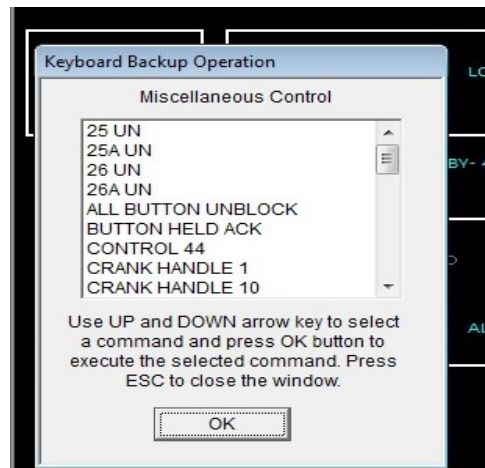
10.2. POINT KEY BOARD OPERATION:

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



10.3. MISCLLENEOUS KEY BOARD OPERATION:

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



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

11. **COUNTERS:**

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

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

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

12. **TRACK CIRCUITS:**

Both UP & DN main lines, Common loop lines and all the point zones are track circuited as L1T1, L1T2, L1T3, L2T1, L2T2, L2T3, L3T1, L3T2, L3T3, L4T1, L4T2, L4T3, L5T1, L5T2, L5T3, L6T1, L6T2, L6T3, L7T1, L7T2, L7T3, 102AT, 102BT, 103AT, 103BT, 104AT, 105BT, 109AT, 109BT, 114AT, 114BT, 116AT, 116BT, 117AT, 117BT, 122AT, 122BT, 124AT, 124BT, 125AT, 125BT, 126AT, 126BT, 128AT, 128BT, 1T, 1AT, 2AT, 2T1, 2T2, 3AT, 4T, 4AT, 11AT, 18AT, 18AT1, 20AT, 45T, 54AT, 41AT, 41T1, 41T2, 43T, 43AT, 45AT, 50T, 50AT, 52AT.

Approach track circuits 2AT, 4AT, 45AT, 43AT & 41AT of 5 Rail lengths for Calling on Signal are provided in rear of the UP and DN Home signals respectively.

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

On account of the doubtful operation of any track circuit by a light vehicle including self-propelled vehicle such as motor trolley or light engine or tower wagon etc., indicating the occupancy/clearance of track, it is necessary that the Station Master on duty satisfies himself that the said vehicle has cleared the point zone track circuits by observing the track indications of the track on either side of the cross over by positively checking the entrance and exit track circuits are showing occupancy and clearance in accordance with the train movement.

13. RELEASE/CANCELLATION OF ROUTE:

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

NOTE: UP& DN Calling on Signals, UP & DN Advanced Starter Signals and DN IB Signal are to be manually cancelled after the passage of the train to release the route. In both the cases after passage of train, cancel the signal to release the route.

14. REPLACEMENT OF SIGNALS TO 'ON':

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

15. PILOTING OF TRAINS IN TO STATION YARD:

Whenever Home signal becomes defective, trains can be admitted by taking off Calling-on signal. Whenever both Home signal and Calling-on signal failed, all trains will be piloted in vide SR. [Refer SR 3.69.03(a) & (c)].

16. PILOTING OF TRAINS - OUT OF STATION YARD:

- i) In case starter Signal has become defective SR 3.70.1 shall be followed.
- ii) In case Advanced Starter Signal has become defective SR 3.70.2 & 3.70.3 shall be followed.

17. SHUNTING:

Shunt back signals SH-8, SH-18 are provided towards THY end of the yard and SH-10 and SH-20 are provided towards NTPC end of the yard respectively for back shunting purpose. Shunt Signal SH-11, SH-15, SH-17, SH-19, SH-21, SH-23, SH-25 and SH-27 are provided for shunting towards THY end and NTPC end respectively. Shunt Signals SH-28, SH-30,

SH-32, SH-34, SH-36, SH-38, SH-40 and SH48 are provided for shunting towards GPT end, JGPM end and VDPD end. SH-37, 35 are provided for back shunting purpose at GPT end and JGPM end. For taking OFF Shunt signals please refer Para No. 4.6.2 of APPENDIX-B.

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

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

19. MAINTENANCE OF S & T INSTALLATION AND ADHERENCE TO MAINTENANCE SCHEDULES:

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

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

20. RECTIFICATION AND CHECK BEFORE RESUMING NORMAL WORKING:

After receipt of the failure information, the sectional Maintainer shall attend to the failure after giving a 'Disconnection Memo'. After rectification of the fault, the Sectional Maintainer shall give 'Reconnection Memo' detailing the rectification. Thereafter the Station Master on duty shall personally check this defective apparatus. After satisfying himself that the gear is in good and proper working order, he shall resume the normal working of the said defective apparatus in terms of SR.3.68.04 (C) and (D).

21. PROCEDURE FOR CARRYING OUT PLANNED MAINTENANCE WORK:

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

22. EMERGENCIES:

Notwithstanding, anything contained in the aforesaid paras when equipment is found defective and unsafe for passage of trains, the Signal and Telecom staff must at once suspend the working of the equipment and associated installations and issue 'Suspension Memo'

explaining the seriousness of the defect or damage to the interlocking installation to the Station master and take the Station Master's acknowledgement. After this, the usual practice of exchange of disconnection memo and reconnection memo can follow. The Station Master must act promptly on such messages and take adequate precaution treating the S&T installation as defective and pass trains over the affected interlocking equipment's according to extant instructions as contained in GR .3.77 and SRs there to.

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

- a) When any point fails to operate normally by individually or Route Setting operation through VDU, the points can be operated by using the crank handle. Normally these crank handles are interlocked with the signaling and interlocking system at this station and normally locked inside the RKT instrument at the respective Crank Handles Locations.
- b) In event of failure/defect of points trains may be received/dispatched on signals after manual operation of points by the emergency crank handles which are interlocked with the signals provided-
The station master deposes a responsible operating official with the crank handle to operate the defective point manually. The emergency crank handle is electrically transmitted to him by the Station Master on duty with instructions to set the defective point(s) to the desired position (viz., Normal or reverse) and clamp and padlocked the same. Both the ends of a cross over must be set in correspondence (viz., Normal or Reverse), the facing and trailing points must be clamped and padlocked. The operating official so deputed, after complying with such instructions should return the emergency crank handle by transmit electrically to station Master on duty.
- c) The station Master on duty should verify from the visual indication available on the VDU/other means that the points are set to the desired position as instructed by him (Normal or Reverse) and thereafter return the crank handle received by him to the respective location box.
- d) He should also verify from the operating official deputed to set the defective point(s) that the same is also clamped and padlocked, supported by a private number.
- e) The station master on duty after ensuring the correct setting of defective point(s) as required in above Paras (b), (c), (d) can take off the concerned signals for movement of the trains over the point(s).
- f) If even after complying with the instructions contained in paras (b) to (e) by station master on duty, the correct setting of the defective points to the desired position is not indicated in the visual indication provided, the train shall be piloted in and out in terms of SRs 3.69.01, 3.69.02, 3.70.01 and 3.70.02.
- g) The cases of failure of motor point should be promptly reported to the concerned signal maintainer/signal SSE/JE for immediate rectification of the same.
- h) Whenever a Crank Handle key is required to be used by a Signal Official for maintenance or attending to failure, the Signal Official will give a disconnection memo to the Station Master on duty and after making necessary entries in the Crank Handle register, the Station Master on duty will obtain acknowledgement of the Signal Official in the Crank Handle Register and then handover to him the Crank Handle key for the Points concerned. All the Points will be treated as defective till the Crank Handle key is returned back to Station Master on duty.

- i) Whenever the emergency crank handle(s) is/are handed over to a Signal official for maintenance work or rectification of a failure, the points for the effected line should be treated as non-interlocked and the Station Master on duty is responsible for introduction of Non-interlocked working and the trains will piloted IN and OUT duly clamping and Padlocking the Points over which the train is to pass, as per SRs 3.69.01, 3.69.02, 3.69.02, 3.70.01 and 3.70.02.
- j) The Crank Handle Register is to be maintained in the following pro-forma by the Station Master on duty wherein the particulars of usage of the Crank Handle must be recorded:
 1. Date:
 2. Point Number which failed or required to be tested:
 3. Time failure:
 4. Disconnection memo number received from S&T Staff:
 5. Signature of SM/Signal Official to whom the Emergency Crank Handle is handed over:
 6. Time Emergency Crank Handle is sent out:
 7. Signature/PN of the Operating official to ensure correct setting, Clamping and Padlocking of the Points:
 8. Date and Time fault rectified.
 9. Time of Emergency Crank Handle received back by SM on duty.
 10. Signature and Designation of the Signal Official who rectified the fault.
 11. Remarks.

24. INTERLOCKING OF SIGNALS WITH BLOCK INSTRUMENTS:

24.1. INTERLOCKING WITH HOME SIGNALS:

All the UP and DN-Home Signals are Electrically interlocked with the respective DLBI so that the handle of the DLBI Instrument cannot be turned from TRAIN ON LINE position to LINE CLOSED position of UP and DN direction as the case may be unless the respective Home Signals is put back to NORMAL position and the respective Block Section monitored by Axle Counter is clear of trains.

24.2. INTERLOCKING WITH ADVANCED STARTER SIGNALS:

The UP Advanced Starter Signals No.1 & 3 is electrically interlocked with DLBI & TLBI of section DVD-THY & DVD-NTPC respectively so that this Signal cannot be taken OFF until the Handle of the concerned Block Instrument is in 'LINE CLEAR' position.

The DN IB Signal is interlocked with DLBI of section THY-DVD so that this Signal cannot be taken OFF until the Handle of the concerned Block Instrument is in 'LINE CLEAR' position.

24.3. SUSPENSION OF LAST STOP SIGNALS:

When the DLBI for section DVD-THY and TLBI for section DVD-NTPC, DVD-JGPM, DVD-VDPD is suspended with its handle in any position for whatever reason the concerned Last Stop Signals and IB Home Signal controlled by the instruments must be treated as suspended and trains shall be worked as per GR 14.25, SR 3.70.02 & 3.70.03.

25. NORMALISATION OF THE BLOCK SECTION AXLE COUNTER AND OF BLOCK WORKING BY RESETTING FEATURE:

1. Digital Axle Counters are provided for Block Sections between DVD-THY, DVD-NTPC, DVD-JGPM and DVD-VDPD
2. The occupation and clearance of the axle counter section are indicated on the VDU by 'RED' and 'GREEN' light.
3. If any Block proving Axle Counter [LVCD] section fails, the Last Stop Signal/IB Signal at the rear station cannot be taken 'OFF' and Block instrument at Advance Station cannot be turned to 'Line Closed' position. In such case, resetting of last Vehicle Checking Device is to be resorted to in either Station.
4. No train shall be allowed on signal to leave a station in any particular section unless: Block Section clear indication is available for the relevant Axle Counter section portion and Last Stop Signal is taken OFF. [Refer Para No: 6.1 of appendix 'B' for procedure of resetting of LVCD Axle counter].

26. POWER SUPPLY ARRANGEMENT FOR SIGNALLING INSTALLATIONS:

Power signaling and interlocking installations and the ancillary field units are fed from the following sources of power supply.

- a) Normal supply from UP AT/ NTPC AT connected to OHE traction distribution [230V 50HZ].
- b) Standby Power supply: Andra Pradesh Electricity Board Supply.
Normal power supply [Single-phase 230V-50 HZ] to the signalling and interlocking installation at the station is drawn from the traction power sources through ATs. Whenever traction power supply fails the SM on duty shall operate the Auto changeover CLS Panel provided in the SM's office connecting the power supply from the healthy sources to the installation in case the knob is not in Auto mode.

The SM on duty however maintain the record of power failures either of the traction supply or local supply and he must promptly report the failure of any one or both the power sources immediately through the section controller and to the concerned Elect. Staff and S&T maintenance staff.

- a) An Auto change over CLS Panel is provided in the SM's office with the three power supplies viz., UP AT, NTPC AT and local for the changing the switch automatically to the available supply. The availability of the supply is indicated by luminous indicator above the circuit breaker for each supply.
- b) Normally the switch will be kept in Auto Mode. If the Switch kept towards UP AT/NTPC AT position, whenever power block is to be given on the line the on duty SM on duty must ascertain that power is available on the other AT and change over the switch to the desired position.

NOTE: If power block is to be given on the UP line NTPC AT must be available and vice versa.

- c) In case of failure of one of the AT supply without any power block the on duty SM has to check whether the circuit breaker has tripped [Three circuit breakers are provided in the changeover switch board, one for each supply and their normal position is down and when tripped it goes UP].
- d) In case of failure of both AT supplies without any power block the local supply shall be utilized by operating the changeover switch. If the circuit breaker is tripping even after resetting, no attempt shall be made to hold it by any means and a message shall be given to concerned SSE [Elect.] and SSE/PSI [OHE] for prompt rectification.
- e) Whenever there is failure of power supply in one AT the SM on duty shall take prompt action to inform to all concerned for rectification.
- f) The On-duty SM himself during each shift shall check & test the availability of power supply on both ATs and make an entry in the station dairy duly initiating for rectification of failure if any.
- g) For IPS system that provides supply to EI, the output of selection supply from Auto CLS panel is taken.
- h) There is a remote monitoring ASM box provided at the station to monitor the health of IPS.

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

Power supply to the signaling installation is fed through Integrated Power Supply System [IPS] installed in the S&T power supply room. For IPS system, 230V AC is taken from the selection output of the Auto change over CLS panel at SM's Office. There is a remote monitoring ASM box provided at the station to monitor the health of IPS.

The IPS system is connected with battery as a backup power source for safe working during transition of power and in case no 230 AC supply is available due to any reason.

In the event of failures of all the sources of 230V 50HZ AC supply, the signaling system shall be fed by backup battery bank connected to IPS for a limited power of 8 to 10 hours. The health of the battery bank is monitored through one IPS Monitoring Panel provided in the SM's room which shall display the voltage of 110VDC battery bank provided as backup source of power supply. Depending up on the health of the battery bank and the system the following indications/alarm will appear on the remote monitoring panel. The indications/alarm, their implications and action to be taken by SM on duty is tabulated below:

SN	Instruction	Health of Battery Bank/Equipment.	Visual Indication	Audio Indication	Action to be taken by SM on duty
A	-	50% DOD	Red	Alarm	Alarm shall be acknowledged by SM on duty.
B	-	60% DOD	Red	Alarm	-do-
C	System shutdown	70% DOD	Red	Alarm	Signal feed cut off and all DC-DC converters to Work. Audio alarm will continue till power Supply is restored.
D	Call S&T staff.	Equipment fault.	Red	Alarm	Failure of any module will give the alarm in ASM's panel. Alarm shall be acknowledged by SM on duty for audio cut off.

On duty SM in each shift shall check and record the readings, indications, etc. in the station dairy duly initiating rectification of failures of IPS System, if any. In the event of failure of Remote monitoring ASM console due to any reason when both traction power and local power failed the SM on duty shall inform concerned Electrical staff immediately. In case 'call S&T staff' or 'system shut down' indication appear on the remote monitoring panel of IPS and/ or mal functioning of the remote monitoring panel SM on duty shall inform the same to concerned S&T staff immediately.

NOTE: [i] DOD indicate depth of discharge of battery bank of IPS

[ii] In case of failure of all AC supply sources, IPS battery bank can provide power supply maximum up to 3 to 4 hours before system shut down indication of IPS.

28. WORKING OF AUTOMATIC FIRE DETECTION AND ALARM SYSTEM:

- In case of any alarm in any particular area due to fire or dust-Zone number on the LCD display can be seen.
- Note down the zone No. and panel display name, by referring display chart.
- Once you find the zone number rush to that particular area where the detector gives alarm.
- The moment the smoke detector detects any smoke particles, the RED LED will blink along with the alarm.
- Once you reach the area where the detector is giving the alarm, check whether the alarm is due to the fire or for any other reason.

- To alert the people in case of emergency press “*” sign which is present inside the key pad together for few seconds. This will enable you to hear the panel alarm.
- To reset the panel press “OFF” button and enter the code 1111 (1 digit four times).
- The control panel will get reset and siren muted.
- If the power fails on this will enable us to see the red indicator on the panel.
- In case of failure in power and if the battery is fully charged, the panel can function effectively as long as the charge in the battery is present.

AUTO DIALLING:

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

APPENDIX –‘C’

ANTI-COLLISION DEVICE (RAKSHA KAVACH)

NIL

APPENDIX- 'D'**DUTIES OF TRAIN PASSING STAFF AND STAFF IN EACH SHIFT**

The following staff are concerned with the movement of the trains whose duties are given below:

COMPLEMENT OF STAFF	STAFF IN EACH SHIFT
SS/SM	02
TRAFFIC POINTS MAN	02

1. STATION MASTER (IN CHARGE):

1. Station in-charge is responsible for the efficient discharge of duties by different members of staff at his station.
2. He shall ensure that the general working of the station is being carried out in strict accordance with the current rules, procedures and instructions.
3. He is responsible for trains passing during his shift.
4. He shall maintain complete and up to date record of Engg./S&T/TRD restrictions. He shall be responsible for bringing forward the caution order register every Monday.
5. He shall be responsible for maintaining Accident Register and Accident Charts and keeping these up to date.
6. He shall maintain figures in respect of the stock and get them relayed to the control in time.
7. He is responsible for the general and satisfactory working of the station and for the efficient discharge of duties by staff working under him.
8. He shall keep all Rule books, Registers, Files and documents neat and up to date.
9. He shall ensure that all equipment, apparatus, and instruments including signaling and interlocking gears and fittings are kept clean and oiled by S&T officials.
10. He shall follow the instructions laid down in SR.3.68.01 (c) and (d) and SR 14.07.01 and B.W.M.2.09 (e).
11. He shall promptly attend to accidents and report them.
12. He shall ensure that firefighting equipment at the station such as fire extinguisher, fire buckets etc. are in good fettle and ready for use.
13. He must ensure that the essential safety equipment at his station are the same complete and in good condition. If there is any deficiency it should be made good without delay.

14. He shall see that TSR, SM's Diary, Inspection Note Book, Reference Books and other station record is properly maintained and preserved for a minimum period as prescribed in this Operating Manual.
15. He shall ensure that all correction slips of Manuals and SWR are posted and changes are made in respective pages.
16. He shall supervise the work of safe working staff and conduct night inspections and report lapses of staff working under him.
17. His special attention is drawn to Chapter-II of G&SR and GR 5.01 to 5.08 with relevant SRs and O.M. Chapter-2.

2. STATION MASTER (Block/Log):

- a) He shall come on duty after taking complete rest and shall not perform his duty under the influence of liquor, drugs or intoxicants.
- b) He shall handle the block instrument himself when on duty and shall not permit any unauthorized person to manipulate or handle the block panel/ block instrument and block telephone.
- c) He shall keep the Station Master's control keys of block instruments in his personal custody whenever, he is required to leave his office even for a short duration.
- d) He shall maintain TSR and other connected record/documents in good shape and ensure that all entries are completed and are up to date.
- e) He shall attend the control and give arrival departure of trains promptly and shall carry instruction given by superiors provided these do not violate safety rules & procedures.
- f) He shall inform the Technician/JE/SE(Sig) through a written message, any failure of signal or block working etc. and invariably enter these failures in Signal Failure Register.
- g) In case of any accident, he shall inform the Section Controller & Station Manager/Station Superintendent immediately. He shall give all the information available with him in regard to the nature, places, cause and assistance etc. in respect of the accident.
- h) He shall communicate reasons for late start of outgoing trains and late arrival of incoming trains to control. He shall keep his reference books (trains working manuals) up to date, posted with latest correction slips and shall keep himself fully conversant with the extant rules. He shall keep his books readily available for inspection when asked to do so.
- i) He shall not absent himself from duty without prior permission of his superiors. He shall not leave his duty unless properly relieved by his reliever and shall not exchange his duty without prior permission of his superiors.

3. STATION MASTER (VDU):

- a) He shall come on duty after taking complete rest and shall not perform his duty under the influence of drugs or intoxicants.
- b) When on duty or when called upon to do so, in case of emergency, he shall be responsible for obtaining and granting line clear to trains as per SWR & GR.
- c) He shall handle the control panel himself when on duty and shall not permit any unauthorized person to manipulate panel.
- d) He shall keep the SM's control keys of control panel in his personal custody whenever, he is required to leave his office even for a short duration.
- e) While coming on duty, he shall ensure that all points and signals are in good working order and all the registers, records, pertaining to train passage are completed in all respect before taking over the charge.
- f) He shall personally ensure that conditions for taking off the reception signals are fulfilled and the clearance of line is verified as per SWR before actually pressing the relevant button for taking off the signals.
- g) He shall ensure from indications available in the panel that the signals are burning brightly and are giving correct indications.
- h) He shall ensure that proper indications of points, signals, track circuits, crank handle, level crossing gate etc., are displayed at their proper places.
- i) He shall ensure that all Shunting operations are carried out as per extant orders and GR 5.19 and SRs thereof.
- j) He shall inform the Technician/JE/SE(sig) in writing or through a written message, any failure of track/signals/points/keys or panels etc, and shall invariably enter these failures in Signals Failure Register.
- k) He shall keep his reference books up to date, posted with latest correction slips and shall keep himself fully conversant with the extant rules. He shall keep his books, readily available for inspection when asked to do so.
- l) He shall not absent himself from duty without prior permission of his superiors. He shall not leave his duty unless properly relieved by his reliever and shall not exchange his duty without prior permission of his superiors.
- m) He shall not consider himself relieved of duty unless he has completed transactions of trains for which he has given/obtained line clear till the complete arrival of such trains.

4. TRAFFIC POINTSMAN:

- a) He shall obey all lawful orders of the SS/SM on duty or official in-charge supervising the hunting during the course of shunting operations including coupling or uncoupling of vehicles, wagons fixing rubber washers, closing wagon doors, displaying hand signals etc.
- b) He shall exhibit danger signal to the official supervising the shunting vehicles are fouled during shunting operation.
- c) He shall pilot the trains in case of abnormal working and when ordered by the SS on duty.
- d) He shall be in proper neat and clean uniform while on duty He shall come on duty after taking complete rest and shall not perform duty under the influence of liquor, drugs, or intoxicants.

- e) Neither shall he absent himself from duty nor shall he exchange his duty without prior permission of his superiors.
- f) He shall not leave his duty unless properly relieved or authorized by his superiors.
- g) He shall set the points properly in non-interlocked yard and man them for all shunting movements and shall not interfere with the points while the vehicles are standing and or passing over them.
- h) He shall be responsible to see that fouling marks are kept clear after completion of shunting.
- i) He shall always commence his duty equipped with hand signal lamps during night and flags during day.
- j) He shall verify the correct setting of route before delivering required papers to the Loco Pilot either though taking "OFF" the relevant shunt signal or by personal observation.
- k) In case of track failure he shall assist the SM to ascertain the clearance line.
- l) He shall be responsible for lighting up of the indicators in the evening and putting out in the morning time fixed by DRM office and ensure that these are burning brightly at night.

NB: - All staff should be in uniform while on duty and follow their rosters issued by DPO/WAT from time to time.

APPENDIX 'E'**ESSENTIAL EQUIPMENT**

A list of essential equipment's is given below which shall be maintained in good Working order.

S. No	Description	Quantity
1	Detonators	20
2	LED based Tri Colour flashing torch.	3 (1 Spare)
3	Hand Signal Flags	3 (1 Spare)
4	Safety chains with Pad locks	6
5	Clamps with Padlocks	16
6	Skids	8
7	Wedges	4
8	Fire & Sand buckets	6
9	Fire Extinguishers	2
10	First Aid box	1
11	Motor trolley on line board	4
12	Block suspension board	5
13	Stretcher	1
14	Blanket	1

APPENDIX-F**RULES FOR WORKING OF DK STATIONS, HALTS, IBH, IBS AND OUTLYING SIDINGS****A. INTERMEDIATE BLOCK SIGNALLING BETWEEN DVD-THY:**

The block section between Duvvada (DVD) and Thadi (THY) has been split into two block sections by providing Intermediate Block Stop signals at KM 756.900 (controlled by DVD station) for UP line and on DN line at KM 757.075 (controlled by THY station). Intermediate Block stop signals are controlled through double line lock and block instruments at the respective receiving ends.

- a) The Block working for section Duvvada (DVD) and Thadi (THY) on DN and UP lines is controlled by the double line Lock and Block Instruments (SGE type) and block instruments are provided at Duvvada and Thadi Stations. The Down LSS signal of Thadi station and UP LSS signal No.1 of Duvvada station are controlled by the clearance of IB section through respective IB section monitoring axle counters and the IB Home signal are controlled in turn through the line clear position of respective Double line lock and block instruments at the receiving stations.
- b) Trains between intermediate block signal to respective Home signal of Station in advance in both the sides are worked by means of SGE type lock block instrument vide 4.09, 5.07, 14.01 to 14.14 of the G & SR and chapter V of BWM.
- c) Last stop signal to the intermediate block stop signal in both the sides are controlled by Digital Axle counter and are worked under absolute block system in terms of G & SR 14.01, 14.13. Indications on VDU provided at Duvvada station.

1. INDICATIONS PROVIDED ON VDU FOR I.B. SECTION:

The indications of signals, IB and Block sections in both up and down directions are shown in the following table:

i) SECTION: DVD-THY

SN	Signal Aspect [S-1]	IB Section Indication [1XT]	IB Home Aspect [S-5]	Block Section Indication [5XT]	Remarks.
1	Green	Green illuminated when Section is clear.	-	-	LSS No S-1 is taken off to dispatch a train up to IB Home.

2	Red	Red illuminated When train enters in to the section.	-	-	IB Section is occupied.
3	-	-	Green	Green illuminated when Section is clear.	IB Home taken off for train up to Home signal of THY.
4	-	-	Red	Red illuminated When train enters in to the section.	Block section is occupied or IB Home signal passed at danger.

ii) IB SECTION:THY-DVD

SN	Signal Aspect [DN LSS of THY)	IB Section Indication [DN IBXT]	IB Home Aspect [S-7]	Block Section Indication	Remarks.
1	Green	Green illuminated when Section is clear.	-	-	DN LSS of THY is taken off to dispatch a train up to IB Home.
2	Red	Red illuminated When train enters in to the section.	-	-	IB Section is occupied.
3	-	-	Green	Green illuminated when Section is clear.	IB Home taken off for train up to Home signal of DVD.
4	-	-	Red	Red illuminated When train enters in to the section.	Block section is occupied or IB Home signal passed at danger.

iii) Buzzer/Bell:

- One audio buzzer is provided in the VDU at DVD to detect train Entering section for outgoing trains. After train passes the intermediate block stop signal, the buzzer/bell will start ringing on VDU at DVD station. On hearing the buzzer/bell the SM must acknowledge the same by pressing on train entering section [TES] muting button to stop the buzzer/bell and then send train entering section report to the SM of the station in advance who shall turn commutator of the Double Line Lock and Block Instrument from the Line Clear position to 'Train On Line position' and acknowledge train entering section following the procedures laid down vide Block Working Manual.
- In the event of failure of I.B. track section [i.e. track clear indication not available] which shall not permit taking 'OFF' last stop signal, it should be ensured by SM on duty at the dispatching station through exchange of private number with the SM of the receiving station

that the last train that passed the last stop signal of his station has fully arrived at receiving station, before allowing the next train to enter in to the section, such permission to the next train shall be granted and the section DVD-THY shall be treated as single section.

- c) By issuing the pilot memo when normalization of the system is not possible. In such case, line clear has to be taken on lock and block instrument. Trains are to be dispatched from the station only after obtaining line clear till such time track section of last stop signal is restored to normal.

2. NORMALIZATION OF THE TRACK SECTION AND OF BLOCK WORKING BY RESETTING FEATURE:

- a) No train should be allowed to leave station in any particular direction unless I.B. track clear indication is available for the relevant track circuited portion of I.B. section and last stop signal cannot be taken off.
- b) A Resetting arrangement for the resumption of I.B. Axle counter under failure condition through co-operative features of both the SM on duty at either end station of the Block section is provided, which should only be resorted to after the train that was lastly sent arrives fully at the receiving station and is certified in this respect by the SM at the receiving station through exchange of private number.
- c) For monitoring of I.B. section working & re-setting of I.B. Axle counters, Track Indications and Re-setting arrangements are provided with Reset Box provided at DVD station and THY station. Counters are also provided on Reset Box for the purpose of recording the re-settings for the I.B. Axle Counters in case of failures in IB section.
- d) The SS/SM on duty at both the station shall maintain a separate register for use of resetting at IB Axle Counters wherein every operation of the resetting button shall be recorded giving details of date of use, train, number, time, number registered in the counter on Reset Box and reasons for resetting and initial each such entry.
- e) The procedure for resetting of the I.B. Axle counters in terms of clause viii (b) above shall be as follows:

(A) SECTION: DUVVADA - THADI ON UP LINE:

	DISPATCHING STATION [DVD]		RECEIVING STATION [THY]
1	SM on duty shall call the attention of SM of THY station through Telephone for re-setting I.B. Axle counter zone giving details of last train left the station into the section.	1	SM on duty at THY after verifying that the said dispatched train arrives fully, shall exchange private number with SM on duty at DVD and resetting of axle counter shall be done through Reset Box by extending cooperation.
2	After Exchanging private number with THY, resetting of axle counter shall be done through Reset Box by extending cooperation.	2	Reset will be done.

(B) SECTION: THY -DVD ON DN LINE:

	DISPATCHING STATION [THY]		RECEIVING STATION [DVD]
1	SM on duty shall call the attention of SM of DVD station through Telephone for resetting I.B. Axle counter zone giving details of last train left the station into the section.	1	SM on duty at DVD after verifying that the said dispatched train arrives fully, shall exchange private number with SM on duty at THY and resetting of axle counter shall be done through Reset Box by extending cooperation.
2	After Exchanging private number with DVD, resetting of axle counter shall be done through Reset Box by extending cooperation.	2	Reset will be done.

3. DISPATCH OF TRAINS:

Dispatch of trains is governed by the provision of G & SR 3.42, 3.70 and Block working manual rules.

a) From DUVVADA Towards THADI:

Trains will be dispatched in accordance with the General Rules 3.42, 3.70., 3.75, 4.35 and 8.01 and subsidiary Rules thereto.

b) DUVVADA TO IBS ON UP AND DOWN LINES:

The SM on duty shall ensure that the portion of Line between LSS and 400Mtrs beyond IBS at their respective ends is clear of obstruction. Indication to this effect is available in the VDU at DVD and Panel at THY. He shall also ensure any non-isolated shunting at their respective ends suspended and shunting authority issued if any is withdrawn and kept in his custody.

Advise the Station Master at the station in advance, of the train No. and description of such intended train to be dispatched and shall take his assent supported by Private Number and shall then set and lock the route and take off the Starter and Advanced Starter.

c) IBS SIGNAL TO THE STATION IN ADVANCE:

The SM on duty shall obtain line clear over Lock & Block instruments from the station in advance to dispatch a train past the IBS signal at the respective ends and shall take off the IBS signal by means of taking of signal No.5 of Duvvada on UP line and DN IB HOME of THY on DN line for section DVD-THY.

After the UP train passes the intermediate Block Stop signal of DVD a buzzer will ring in the VDU. On hearing the buzzer/bell the SM must acknowledge the same by clicking train entering section [TES] muting soft button to stop the buzzer/bell and then send train entering section report to the SM of the station in advance who in turn will turn commutator of the Double line Lock and Block Instrument from the line clear position to Train On Line position and acknowledge train entering section. After dispatch of a train from DVD into the Block

section between DVD and intermediate Block Post in case when the intermediate stop signal is not taken 'off' but the buzzer has started ringing, this may be either due to the train passing intermediate Block stop signal at 'ON' position or due to failure of the track section in advance of that intermediate Block Signal and shall exchange Private Number with the SM of the advance station indicating the occurrence and the number of the train. On getting the information from the SM supported by Private Number, the SM on duty at DVD in turn will then inform the matter to SCR on duty and concerned S&T official.

The procedure must be rigidly followed irrespective of the fact whether line clear for train has been received from station in advance or not and this must be recorded in the Train Register and SM's diary book of both the Stations.

Dispatch of trains towards THY station in case of failure of the UP Advanced Starter signal at DVD Station due to failure of "Axle Counter" device or otherwise. If the failure of the Advanced starter of DVD due to the failure of axle counting device or the indication lamp (repeated by indication lamp) showing 'Red' light either due to power failure or due to any other causes, the re-setting "Push Button" provided with Veeder counter at the SM office for resorting the normal function of the signal, should be operated accordingly to the following instruction whenever the UP Advanced starter signal of DVD is found defective by the Station Master and the following procedure shall be adopted.

On receipt of this information, the SM on duty after ensuring that all trains which had left his Block Station had arrived complete and intact at THY station (by exchange Private Number with the SM/THY confirming this), shall press the resetting button with cooperation of SM/THY of the axle counter. When the resetting is successful, it shall be indicated by a green light in the resetting panel provided in the SM office at **DVD****RGDA**. The use of this resetting button is registered on the veeder Counter on reset box and the SM should record this giving the details of the occasion with timings in the Veeder Counter register kept in the station.

If it is not possible to restore normal working of the counter by use of the resetting button, the ESM-in-charge of the section shall be served with a written memo to attend the defective signal and rectify the same. The ESM-in-charge of the section on being served with a memo by the SM shall attend the failure and rectify the fault. The ESM after ensuring that all S&T gears relating to defective signal have been attended to and are in working order except the axle counter which needs re-setting shall establish communication with SM concerned and ask him to reset the axle counter by pressing the reset push button. There after the SM on duty, after ensuring that all the trains which had left his Block Station had arrived complete and intact at THY (by exchanging of PN with SM of DVD confirming this) shall press the resetting button provided in the reset box at DVD station and resume the normal working.

d) ACTION TO BE TAKEN WHEN A TRAIN PASSES INTERMEDIATE BLOCK STOP SIGNAL AT ON:

SPECIAL INSTRUCTION IN CASE OF A TRAIN PASSING IBS AT "ON" POSITION:

- i) In case train run away indication appears the SS/SM receiving station shall not turn the block instrument handle to line clear position and SS/SM at sending station shall not take any action to dispatch the third train unless the second train which passed the IB signal in the 'ON' position has actually arrived and its complete arrival is verified by the receiving station.

- ii) Every case of a train passing IB signal at ON position without strictly following the provision of GR 3.75 should be treated as a breach of block rule by the loco pilot and action to be taken accordingly.
- iii) When train run away indication appears at the dispatching station without any train in the section, the IBS system should be treated as failed and signal maintainer should be advised. All the subsequent trains shall be piloted out after duly taking line clear treating entire section as one block section as per GR 3.75 (4).
- iv) Whenever a train after having obtained line clear passes IBS (when not taken off) in “ON” position the train run away indication appears at the dispatching station and train entering section indication appears at the receiving station, under such circumstances no further train shall be allowed in the section till the said train arrives completely at the receiving station i.e., station in advance, and its complete arrival received at the receiving station i.e., station in rear supported by private number treating the entire block section as single section.
- v) If any train passes IB signal at ‘ON’ when there is a train in the section between IBS and the station ahead, the train run away indication will appear at both receiving and dispatching station. Under such circumstances the SS/SM in the receiving station shall not turn the block instrument to line clear position and SS/SM at sending station shall not take action to dispatch the 3rd train, unless the 2nd train which passes the IBS in the ON position has actually arrived and its complete arrival is verified by the receiving station.
- vi) Permission button to be pressed for the run away train by break opening the seal only after verifying that the last vehicle of the run away train has arrived intact and ensured by exchange of private number with the SS/SM of the sending station. In case of failure of axle counter equipment at the sending station, permission button may also be pressed for normalizing the system only after verifying that there is no train in the section and after duly exchanging private number with the SS/SM of the sending station.
- vii) Whenever a train run away, indication appears when there is a train in the section, no further train should be allowed in the section till resetting is done as per item no. 30.3 above.
- viii) before any resetting operation is done, the dispatching station should advise the receiving station giving details of the last train that has entered the section and should ensure by exchanging of private number that the last train has arrived completely at receiving station.

4. ACTION TO BE TAKEN IN CASE OF FAILURE OF INTERMEDIATE BLOCK STOP SIGNAL:

During the failure of Intermediate block stop signal GR 3.75 and SRs thereto shall be followed.

5. INDICATION ON THE VDU CUM RESETTING PROVISION AT DVD:

The VDU has the following light indications at the DUVVADA:

- a) Green indications for the track- section portion by Axle Counter, which remain normally lit to indicate that the track is clear. These lamps extinguish no sooner the train passes the last stop signal and their place red indication are lit to indicate that the track is occupied.
- b) Red indications for the last stop signal replacement track circuit which remain lit so long this track- circuit is occupied or in under failure condition.
- c) Red indication ahead of the IBS Signal, which are lit if the train passes the side signal in “ON” Position. These indications continue to glow till such time the lock and block working is resumed through emergence re-setting feature.

- d) Red indications just ahead of IBS Signal for the IBS signal replacement track circuit. These indications normally remain green and are lit RED either during occupation by a train or during failure of this track circuit.
- e) Red indications for the block section for receiving trains. These indications shall normally remain green and shall be lit RED only when the incoming train passes the IBS signal. It remains lit till such time train arrives fully and Block Instrument is normalized.
- f) For resetting of I.B. Axle counter please refer Para No. 6 of Appendix 'B' of this SWR.

Every Case of re-setting shall be entered in a register in the following proforma.

Date and time	Train No. Last entered the block section	Private No. of station ahead for Complete Arrival of the train Under Col.2	Veeder Counter No Before resetting operation completed	Train No. Entering Block Section Immediately after the resetting operation	Remarks	Signature of SS/SM
1	2	3	4	5	6	7

- g) If resetting is not possible under item as mentioned above, the system should be treated as failed and train will work treating the entire section up to the Block Station immediately ahead of the IBS Post as one block section as per GR 3.75(4).

RUNNING OF MOTOR TROLRIES ON IBS ZONE:

- a) While allowing motor trolley/4 wheeler tower wagon/material trolley etc., entire section between DVD-THY shall be treated as one block section and shall be issued T-369 [3b] for passing IBS at "ON" position BWM 5.39 shall be followed.
- b) After the complete arrival of the said Motor Trolley/4 wheeler tower wagon/material trolley etc., at the station ahead, Station Master at adjacent station shall exchange Private Number in token of complete arrival and then shall resume normal working by resetting the Axle Counter as stated in the SWR.
- c) Motor Trolleys shall not be allowed on following line clear.
NOTE: - Backing of train on the portion of line after passing the intermediate Block Stop signal normally shall not be allowed, however, if it becomes inevitable to back, such backing may be done with great caution as mentioned in SR 3.75.04.

6. SIGNAL POST TELEPHONE:

A telephone socket (RE Type portable telephone kept with Loco Pilot with a RED press button at the bottom is provided at the foot of each IB signal and is meant for loco pilot to contact the SS/SM in rear by pressing the RED button. The loco pilot of the train encountering the IB signal at 'ON' position shall contact the station in rear to find out the occupancy or otherwise of the block section ahead.

7. NORMAL POWER SUPPLY TO IBS GOOMTY:

Normal power supply to the Signaling and Interlocking installation at the IBS goomty is drawn from the traction power sources (230V-50 HZ, UP AT and DN AT) with auto-change over arrangement in IB Goomty through a panel. Whenever any traction power supplies fail,

the auto-change over unit will automatically connected to the other available AT supply. IPS is provided at IBS for power back-up up to 3 hours.

A.. Working of DK Station, Halts, IBS, and IBH at DVD station: NIL

B. RULES FOR WORKING OF NEW CROSSING STATION AT NTPC.

- I. A National Thermal Power Corporation (NTPC) siding takes off from DVD yard at THY end in continuation to Line No.6 &7 of DVD yard.
- II. A new Xing panel station is situated between DVD-NTPC. The Station Master of NTPC crossing station shall grant / obtain line clear from the adjacent block station DVD as per the rule in vogue.
- III. The trains to & from siding are worked under Absolute Block system of working with Multi Aspect Colour Light Signalling system.
- IV. Taken off last stop signal No.3 of DVD is the authority to precede into block section DVD-NTPC.
- V. Token less block instrument are provided at DVD and crossing station at NTPC siding.
- VI. The crossing station of NPTC is manned by Station Master and other Operating staff deputed by NTPC authority.
- VII. The train operation staff deputed by NTPC authority shall follow the guide lines adopted by railway.