

भारत सरकार (GOVERNMENT OF INDIA)
रेल मंत्रालय (MINISTRY OF RAILWAYS)
रेलवे बोर्ड (RAILWAY BOARD)

No.2012/Sig/PRIME/1

New Delhi, Dt. 31.07.2024

The General Managers
All Zonal Railways

Sub: Action Plan for improving Reliability of Signalling systems

The Reliability, availability, maintainability and safety of signalling systems plays a vital role in safe train operations. Railways should devise a program for periodic counseling of staff involved in maintenance and construction activities regarding various quality and safety aspects and ensure quality of work in projects.

The following instructions/guidelines are, therefore, reiterated/issued for implementation on Zonal Railways:

1. Plan for Reliability Improvement and Maintenance Effectiveness (PRIME)

Based on inputs from Zonal Railways, regarding improvement in reliability & maintenance, Zonal Railways have already been given a list of 21 items to comply within the current financial year.

2. Installation and Commissioning Practices

The detailed instructions/guidelines circulated vide Board letter nos. 2012/Sig/SF/2(Policy) dtd. 20.07.2023 regarding adequate precautions, preparations, adequate deployment of competent personnel for completing verification/validation, correspondence checks & testing need to be implemented in right earnest for smooth and safe execution of infrastructural works.

Further Railway Board vide letter 2022/Sig/36/Sig Drwg dtd. 29.03.2022 have issued instructions for implementation of Standard circuits for <100 routes stations, these may be ensured.

RDSO vide letter RDSO-SIG.MISC(ARSE)/1/2024 dtd. 24.07.24 have reiterated a compendium of guidelines for quality & reliability of Signalling system installations. Zonal Railway may examine the same while commissioning of Installation.

3. Training of staff

Instructions already exist for training of staff in new systems like EI, Digital Axle Counters, IPS etc.

- Recently, Comprehensive instructions covering various aspects pertaining to training regarding ABS have been issued to Zonal Railways (Ref: RB's letter no. 210/Sig/IRISET/Trg/Pt-1 dated 28.06.2024). Compliance of the same shall be reviewed periodically.
- Guidelines regarding rigorous practical training to meet the objective of Signalling works to facilitate ongoing infrastructure works and to improve safety & reliability have been issued vide letter no. 2020/Sig/IRISET dated 11.06.2024. These may be followed.

Also, in order to improve reliability:

- Regular counseling of Engineering staff to adopt standard maintenance practices to avoid failures due to :
 - Staff working
 - Glued joint shorting
 - Loose packing
 - Intimation to signalling staff while working on Points
- Regular counseling of Operating staff regarding
 - VDU/Panel working especially emergency operations
 - Crank Handle working
 - Sliding Boom Barrier working

Further, Railways to monitor the existing Training regime and give special emphasis on acquainting and training of the staff of all concerned departments on any new systems coming up on that particular Railway.

4. Replacement of Signalling installations that have outlived their codal life

There are many Signal installations that have completed or are on the verge of completion of codal life. However, their replacement is linked to various infrastructure work such as doubling, third-forth line or multiple lines. Any delay in execution of these infrastructural works has a cascading effect on timely replacement of such installations thus affecting the performance & availability of Signalling System on overall basis leading to traffic and safety repercussions. In order to improve safety and reliability, replacement of such installations need to be taken up on priority, de-linking the same from execution of other projects, as far as possible.

5. Cable cuts/damages along Railway track

Frequent Signaling incidences on account of cable damage/cuts have significant repercussion on train operations which may also result in catastrophic situation if adequate precautions are not taken. To avoid such cases, following needs to be ensured:

- Utility shifting before taking up Engineering works.
- Implementation of JPO dated 12.06.2023.
- Imposition of penalty as per norms.
- Uploading of cable route plan on Divisional website.



- Cable Protection Management System (CPMS)- Web based application may be tried as provided by SCR.
- Protection of cables at vulnerable locations.

6. **Issues pertaining to Thick Web Switch (TWS)**

Engineering and S&T officials of the Zonal Railways have been asked to implement the instructions issued by Track Dte of RDSO to address TWS maintenance issues vide letters No. CT/PTX/TWS/Design dtd. 09.03.2023 & 12.10.2023. These need to be implemented in a time bound manner. Further, maintenance efforts of Signaling staff in case of Thick Web Switches laid on **curves** have increased manifold. Therefore modifications suggested by RDSO need to be executed to address issues of TWS at such locations.


7. **Zonal Railways Action Plan for Reliability**

Zonal railways were asked to prepare a comprehensive action plan to improve reliability of their respective Signalling systems based on the analysis of signal incidences vis-à-vis corresponding period of the previous year. It includes the following:

- (i) Identifying major causes of signal incidences and make a (a) Long term, (b) Short term action plan along with scope and TDC to address the root cause.
 - (ii) Identifying five stations on each Division where there are large no. of signal incidences/deterioration with regards to no. of signal incidences. Further, such stations are to be attended through directed maintenance/maintenance gangs. The list is to be revisited periodically to see the impact or otherwise of the action taken.
 - (iii) Any innovation done towards improving reliability and maintenance, which can be further expanded on other Zonal Railways.
8. A copy of the Reliability action plan 2024-25 covering main items is enclosed (PRIME item – Annexure-I, Other than PRIME item – Annexure-II) for ensuring implementation. Zonal Railways are advised to ensure implementation of the same along with zone specific reliability action plan communicated to Board office, monitoring of which needs to be ensured at PCSTE's level.

This issues with the approval of MI.

DA: As above


31/08/2024
(रामेश्वर मीना)

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Annexure-I**PRIME (Plan for Reliability Improvement and Maintenance Effectiveness)**

SN	Item	Unit	Target (2024-25)
1	Replacement of identified defective cable	km	3286
2	Replacement of over aged defective Point Machines	Nos.	4304
3	Automatic Fire detection and Alarm System	Stns	476
4	Testing of Safety Integrity of Stations	Stns	885
5	Block Proving Axle Counter(BPAC) media redundancy OFC & Quad	BS	393
6	Block Proving Axle Counter(BPAC) with equipment redundancy SSDAC/HASSDAC	BS	394
7	BPAC System 1 & System 2 Power Supply redundancy as per TAN	BS	839
8	Provision of Sliding Boom at Interlocked Level Crossing gate	Nos.	541
9	Failure alarm for track feed battery chargers	Stns	408
10	Provision of Remote Terminal Unit (Data Loggers) at Interlocked LC gates, IBS, Auto Hut, Relay Hut, End Cabins etc.	Nos	680
11	Validation of Data Loggers- Stations, IBH, LC gates, Auto Hut etc.	No. of installations	2519
12	Monitoring through Data Loggers		0
(i)	Earth Leakage Detector (ELD)	Stns	576
(ii)	Dual Track Detection System	Stns	72
13	Implementation of typical circuit for EI (Scope & Target as per Signalling works target for the year 2023-24).	Stns	283



SN	Item	Unit	Target (2024-25)
14	(i) Generation of RCC through SigDATE	Stns	213
	(ii) Generation of Application Logic through SigDATE	Stns	80
15	EI modifications – departmentally for minor alterations	Alterations	78
16	Compliance of EI TAN on cyber security dtd: 01.03.2023	Nos	929
17	Uploading of completion drawings in Railtel Server	Stns	882
18	Uploading of Integrated S&T Cable Route Plan on the Divisional/Zonal Railway website(Stns+BS)	Nos	2780
19	Updation of Version of processor module of MK-II from PM 1/3 to PM 3/3	Stns	83
20	Updation of ECB & SYNC PCB Firmware of MLK-II installation to Ver 7.70	Stns	295
21	Conversion of Warm Standby to Hot Standby (EI)	Stns	81

Annexure-II**Reliability Improvement Action Plan other than PRIME**

S N	Description	Scope	Target
1	Power Supply		
	(i) Replacement of old version IPS (Ver. 2004) – 100%		
	(ii) Proper Auditing of Parametric/Ring Earth – 100%		
	(iii) Provision of indication type SPD's – 100%		
	(iv) Replacement of over aged IPS battery – 100%		
2	Points		
	(i) Implementation of improvements in Thick Web Switch as suggested by RDSO – 100%		
	(ii) Use of improved SSD of thick switch as per RDSO latest drawing.		
	(iii) Replacement of lock slide of old design prone to breakage.		
	(iv) Provision of IP-67 Point motor in water logging prone areas.		
	(v) Provision of sealing Point machines before monsoon in water logging prone location as per Central Rly. Scheme.		
	(vi) Galvanized ground connection in vulnerable locations.		
3	Track Circuits		
	(i) Replacement of Analog Axle Counter with Digital.		
	(ii) Provision of Axle Counter at Vulnerable locations.		
	(iii) Replacement of identified batteries of Track Circuit.		
	(iv) Replacement of redundant Glued Joints.		
	(v) Replace of defective Glued Joints.		
4	Relays		
	(i) Replacement of Track relays & Line Relays based on no. of operations as identified.		
	(ii) Paralleling of spare contacts in relays/TGT bell working as possible.		

Note: Zonal Railways may fill up total scope and targets during 2024-25 considering status of works sanctioned / proposed etc.

