

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

No. 2024/Sig/25 Conf./90<sup>th</sup> SSC Mtg

New Delhi, dated 05.08.2024

PED/S&T,  
RDSO, Manak Nagar,  
Lucknow

**Sub: Recommendations of 90<sup>th</sup> Signal standards Committee (SSC) Meeting (2024).**

**Ref: Minutes of 90<sup>th</sup> Signal Standards Committee (SSC) Meeting (2024) issued vide RDSO's letter no. STS/C/90<sup>th</sup> SSC Mtg dtd 01.07.2024.**

Recommendations of the 90<sup>th</sup> SSC submitted for item no. 1219 to 1230 vide RDSO's letter under reference have been considered in Board's office and approved by competent authority (Member/Infra) are hereby attached as annexure.

DA: As above (08 pages)

  
05.08.2024  
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Annexure to Letter No. 2024/Sig/25 Conf./90<sup>th</sup> SSC Mtg dated 02.08.2024

Item No.	SSC Agenda Item	SSC recommendations	Board's view on SSC recommendation
1219	<p><b>Block working in-built in Electronic Interlocking system:</b></p> <p>Physical Block Instruments are being replaced with In-built Block working where same make Electronic Interlocking are provided at adjacent stations. Guidelines also required where two different OEMs are involved.</p>	<p>Based on deliberations, SSC recommends following:</p> <p>a) Use of block working inbuilt in EI system should be proliferated in new installations, new works like new line, doubling/third/fourth line works etc. where same make EI systems are available at two adjacent stations and in sections where automatic Signalling is not sanctioned/proposed to be commissioned in next few years.</p> <p>b) Block working inbuilt in EI system should be implemented as per RDSO's scheme by using dark OFC fibres for EI-EI communication and OFC cables be laid on diversified/ standby path for reliability. Monitoring of OFC link shall be done to ensure availability and reliability..</p> <p>c) Provision for block working inbuilt in EI system shall be incorporated in the Block Manual by the Zonal Railways.</p> <p>d) Use of block working inbuilt in EI systems of different make can be explored as and when the Standard Interface Protocol (SIP) for EI-EI interface is developed by the EI OEMs.</p>	<p>a), b) &amp; c) -Agreed as recommended.</p> <p>d) - Agreed with slight modification as below:</p> <p>Use of block working inbuilt in EI systems of different make can be explored as and when the Standard Interface Protocol (SIP) or approved protocol converter for EI-EI interface is developed by the EI OEMs.</p>
1220 (a)	<p><b>Automatic Block Signalling scheme:</b></p> <p>There are various schemes/practices being followed during execution of ABS work which are Relay based; E/OC based and UFSBI based. The current &amp; future requirement of seamless interfacing for IR-ATP Kavach &amp; CTC works needs to be looked into.</p>	<p>Based on deliberations, SSC recommends following:</p> <p>a) E/OC based Automatic Block Signalling (ABS) scheme with a separate EI for ABS section may be used for new works which are yet to be sanctioned. RDSO should conduct the impact analysis on maintainability. However, for existing sanctioned works, ABS scheme should be decided by PCSTEs based on the sanctioned scope of work, provisions of estimates, site requirements etc.</p> <p>b) Purely relay based Automatic Block Signalling (ABS) should not be planned for future works which are yet to be sanctioned.</p> <p>c) FnMux has the potential to simplify the Automatic signalling installation. Present RDSO specification of FnMUX is without logic. Specification of FnMUX with logic processing should be issued by RDSO as complete process of specification finalization is complete. It will give a cost effective and maintenance friendly solution for ABS/</p>	<p>Agreed with recommendations as below:</p> <ul style="list-style-type: none"> <li>E/OC based ABS scheme with a separate EI for ABS section for new works.</li> <li>Relay based ABS scheme should not be planned for future works.</li> <li>As there are no approved vendors for FnMUX, use of same in Automatic</li> </ul>

		IBS works etc.	Signalling may be decided once zones have adequate experience for FnMUX working.
Item No.	SSC Agenda Item	SSC recommendations	Board's view on SSC recommendation
1220 (b)	<p><b>Automatic Block Signalling section display to SM:</b></p> <p>The requirement of display of all auto section signals to SM is not mandatory. There are auto sections with displays and without displays to SM. For PI based auto signals, display is provided through Datalogger. There is a time delay between the function and display. When datalogger communication fails, the display is not visible to SM. It is proposed to give display of only 1st auto signal to SM. Other signals to maintainer only.</p>	<p>Based on deliberations, SSC recommends following:</p> <p>1. Parameters to evaluate the performance of clamp type axle counter system should be decided and circulated by RDSO. Based on the performance received from the Zonal Railways on those parameters and other inputs, decision to use only clamp fixture will be taken in the next SSC.</p> <p>2. Till that time present system with both clamp and Nut Bolt fixing mechanism by drilling holes in the rail may continue.</p>	Agreed as recommended.
1221	<p><b>Use of clamp type wheel sensor of Digital Axle counter:</b></p> <p>Railway Board vide letter no. 2018/CE-II/TK/S&amp;T/AGJ &amp; DH dated 20.08.2020 had directed that in all-new works in block sections, glued joint shall be avoided by providing Digital Axle Counter with design redundancy for BPAC, IBS and ABS applications. At present, both web mounting wheel sensor as well as clamp type wheel sensor are used for D.A.C. Web mounting wheel sensor requires drilling of holes in rail and such locations are prone to rail fracture as initiation of cracks may take place from such locations. Hence, clamp type wheel sensor should</p>	<p>Based on deliberations, SSC recommends following:</p> <p>1. Parameters to evaluate the performance of clamp type axle counter system should be decided and circulated by RDSO. Based on the performance received from the Zonal Railways on those parameters and other inputs, decision to use only clamp fixture will be taken in the next SSC.</p> <p>2. Till that time present system with both clamp and Nut Bolt fixing mechanism by drilling holes in the rail may continue.</p>	<p>Agreed as recommended.</p> <ul style="list-style-type: none"> <li>• Board's guidelines are there for Axle counter track device, preferably to be of clamp mounted type.</li> <li>• Performance of clamp mounted axle counter devices is to be monitored by RDSO &amp; zonal railways.</li> <li>• Same will be reviewed in next SSC.</li> </ul>

	<p>invariably be used for all type of applications of DAC. RDSO is therefore requested to amend RDSO Specification of DAC to use only Clamp Type Wheel Sensor (Track Device) vide NWR's letter No. SG/158/4/MSG/TSC Vol. VI Dated- 28.03.2024.</p>	
<p>Item No.</p>	<p>SSC Agenda Item</p>	<p>SSC recommendations</p>
<p>1222</p>	<p><b>Review of IRSEM Para 17.8.1(c). Regarding Axle Counter, this Para states that Tie Tamper shall not be used for 4 sleepers on either side of the track devices. Incidentally they should be manually maintained:</b></p> <p>IRSEM states that Tie Tamper shall not be used for 4 sleepers on either side of the track devices. Incidentally they should be manually maintained. This leads to multiple bad spots track esp. in Automatic signalling section and need review.</p>	<p>Based on deliberations, SSC recommends following:          "Para 17.8.1 (C) of IRSEM should be deleted as tamping without opening axle detectors will create bad spots in the track."</p>
<p>1223</p>	<p><b>Review of SEM Para -7.3.4 regarding placement of "Entering automatic block territory" Board in automatic Block Territory:</b></p> <p>As per SEM para - 7.3.4, "where the block working at one end of a station is automatic and the other end is absolute, an indication board with suitable legend shall be provided at the first stop signal of the station. The legend on the board shall be "Entering absolute block territory" or "Entering automatic block territory" as appropriate. As per practice of various railways such as CR, WR, NCR etc, the automatic signaling is done from</p>	<p>Based on deliberations, SSC recommends to modify IRSEM para 7.3.4 as following:          Modified IRSEM para-7.3.4, "where the block working at one end of a station is automatic and the other end is absolute, an indication board with suitable legend shall be provided at the first-Last stop Signal of the station at suitable location. The legend on the board shall be "Entering Absolute Block Territory" or "Entering Automatic Block Territory" as appropriate."</p>
		<p>Board's view on SSC recommendation          Agreed as recommended.</p> <p>Para 17.8.1 (C) of IRSEM 2021 to modify as under:          "Whenever Tie Tamper is used, track devices should be removed temporarily. In case it is not possible to remove, the same should be clearly marked and made known to the operator before the start of work."          (REF: IR-TMM Sept.2019, Para 224(3) (I))</p> <p>Agreed with slight modification.</p> <p>Modified IRSEM para-7.3.4 will be as under:          "where the block working at one end of a station is automatic and the other end is absolute, an indication board with suitable legend shall be provided before the Last stop Signal of the station. The legend on the board shall be "Entering Absolute Block Territory"</p>

Item No. 1224	<p>Advance starter. Accordingly "Entering automatic block territory" legend board at first stop signal (Home Signal) needs to be modified and it should be placed 20 Mtr before advance starter.</p> <p><b>SSC Agenda Item</b></p> <p><b>Standardization of auto resetting circuit in case of dual detection:</b></p> <p>Different types of Auto resetting arrangement are followed for Dual detection of axle counter track circuit for BPAC/IBH/Yards applications. Work for Provision of Dual detection of Multi section digital axle counter has been sanctioned for various stations over entire Indian Railways. References: (i) Rly Bd's letter no.2004/Sig/SGB/5 dtd.05.01.2005 (ii) WCR Auto Resetting procedure adopted: Ltr WCR/NHQ/110/RDSO Corresp/Sig-1 Pt-XIII dated 19.03.2024. Standardization of auto resetting procedures for axle counters for various application across Indian Railways.</p>	<p>Accordingly "Entering Automatic Block Territory" as appropriate.</p>																				
<p><b>SSC recommendations</b></p> <p>Based on deliberations, SSC recommends following:</p> <p>1. A safety case analysis of the dual detection system, including auto reset schemes in it by Independent Safety Assessor should be planned and conducted by RDSO. Based on its results, final dual detection scheme with auto reset arrangement shall be issued.</p> <p>2. As an intermediate step, the scheme discussed during the meeting should be adopted with correction of time delay of minimum 30 seconds in place of 5-10 seconds. All the auto reset will be preparatory only. The corrected scheme based on WCR's practice communicated vide letter 19.03.2024, now shall be as following:</p>		<p><b>Board's view on SSC recommendation</b></p> <p>Agreed with slight modification in case of dual detection as under:</p> <ul style="list-style-type: none"> <li>• Time delay for auto resetting shall be minimum 30 seconds.</li> <li>• All auto resetting to be preparatory only.</li> <li>• Other aspects of Reset schemes used for different applications such as ABS/TBS/BPAC/Yard and supervisory track sections to be examined by a SAG committee.</li> </ul>																				
<table border="1"> <thead> <tr> <th>SN</th> <th>Application</th> <th>Auto resetting</th> <th>Line Verification</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BPAC</td> <td>Auto resetting is possible when either of the system fails with a time delay of minimum 30 seconds.</td> <td>Required only when both systems fail.</td> <td>All resetting are Preparatory Type</td> </tr> <tr> <td>2</td> <td>IBS</td> <td>In Double Line- Auto resetting when either of the system fails with a time delay of minimum 30 seconds  In Single Line-Supervisory Axle Counter is provided for complete block section and Auto resetting will be possible after picking up Supervisory Axle Counter with a time delay of minimum 30 seconds when any of the system fails.</td> <td>Required only when both systems fail  Required only when systems fail along with Supervisory Axle Counter and complete section is clear of trains.</td> <td>All resetting are Preparatory Type</td> </tr> <tr> <td>3</td> <td>ABS</td> <td>1. Auto resetting when either of the system fails with a time</td> <td>Required only when any</td> <td>All resetting are</td> </tr> </tbody> </table>		SN	Application	Auto resetting	Line Verification	Remarks	1	BPAC	Auto resetting is possible when either of the system fails with a time delay of minimum 30 seconds.	Required only when both systems fail.	All resetting are Preparatory Type	2	IBS	In Double Line- Auto resetting when either of the system fails with a time delay of minimum 30 seconds  In Single Line-Supervisory Axle Counter is provided for complete block section and Auto resetting will be possible after picking up Supervisory Axle Counter with a time delay of minimum 30 seconds when any of the system fails.	Required only when both systems fail  Required only when systems fail along with Supervisory Axle Counter and complete section is clear of trains.	All resetting are Preparatory Type	3	ABS	1. Auto resetting when either of the system fails with a time	Required only when any	All resetting are	
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		<p>delay of minimum 30 seconds.</p> <p>2. Multi-level Supervisory Axle Counter Track sections are also provided. The failed system will auto reset with a time delay of minimum 30 seconds after picking up of Supervisory track section</p>	<p>systems fail with Supervisory Axle Counter and complete section is clear of trains.</p>	<p>Preparatory Type</p>			<p>4 Yard</p> <p>Auto resetting may be possible when either of the system fails with a time delay of minimum 30 seconds.</p>	<p>Required only when both systems fail</p> <p>All resetting are of Preparatory Type as in case of auto reset line verification in not possible.</p>	<p>Board's view on SSC recommendation</p> <p>Agreed with the recommendation as under:</p> <p>IRSEM new para will be added once RDSO submits the draft para and Drawing.</p>
<p>Item No. 1225 (a)</p>	<p><b>SSC Agenda Item</b></p> <p><b>Provision of Dummy Shunt Signal:</b></p> <p>As in practice, non illuminated STOP boards were provided as destination of shunt routes. These stop boards were prone to theft/ displacement/ defacement over the time. Being a signalling requirement and as per CRS observations from time to time, provision of 'Fixed ON', shunt signals were provided to improve its availability and maintainability. However, no such provision is</p>	<p>4 Yard</p> <p>Auto resetting may be possible when either of the system fails with a time delay of minimum 30 seconds.</p>	<p>Required only when both systems fail</p>	<p>Preparatory Type</p>	<p>3. There are divergent views and practices on reset schemes to be used for different applications such as ABS/IBS/BPAC/Yards etc. It includes decision on supervisory track sections and their roles in resetting. To study it further, a SAG level committee to be formed to recommend a scheme on it. It will include following members:</p> <p>a. Sh. Debashis Bhattacharya, CSE/SER</p> <p>b. Sh. P. K Verma, CSE/NCR</p> <p>c. One officer to be nominated from SECR.</p>	<p><b>SSC recommendations</b></p> <p>Based on deliberations, SSC recommends following:</p> <p>New para shall be added to IRSEM in Section 2 of Chapter 7 that "Retro reflective Stop Board will be provided at the destination of Shunt Route as well as in Unidirectional Loop line". Draft of Para and suitable drawing with Colour scheme and dimensions should be finalized by RDSO.</p>	<p>Board's view on SSC recommendation</p> <p>Agreed with the recommendation as under:</p> <p>IRSEM new para will be added once RDSO submits the draft para and Drawing.</p>		

<p>available in GR &amp; SEM. Hence, provision of such 'Fixed ON' shunts signals with nomenclature as DSH (Dummy shunt) should be standardized.</p>	<p><b>SSC Agenda Item</b></p>	<p><b>SSC recommendations</b></p>	<p><b>Board's view on SSC recommendation</b></p>														
<p><b>1225 (b)</b></p> <p><b>Stipulations for dimension &amp; Colour scheme for Calling-On legend board:</b></p> <p>In practice, Calling-on legend boards are provided near SRL calling on track circuits with instructions for LP. Stipulations for dimension and colour scheme of this legend board should be provided in IRSEM &amp; GR.</p> <p><b>1226</b></p> <p><b>Provision of timers in opening of LC gate when Gate Signal at more than 180 m from LC:</b></p> <p>Placing of Gate Signal exactly at 180 meters from LC may not always be feasible at site and thus the distance of Gate Signal from LC gate may be more than 180 meters in many cases. If this happens a delay for opening of LC gate becomes 120 seconds as per item no. 11 of para no. 21.1.21 of IRSEM. This 120 seconds time delay becomes more in case of busy L-xings. It is proposed that for Gate Signal placement in the range of 180 to 240 meters time delay to open the gate is fixed at 60 seconds only</p>	<p>Based on deliberations, SSC recommends that RDSO should standardize Calling On Board drawing.</p> <p>Based on deliberations, SSC recommends that whenever gate signals are provided between 180 m to 200 m from LC gate, 60 seconds time delay is to be provided and for distance beyond 200 m, 120 sec timer should be provided and accordingly modified IRSEM para table 21.1.21 at 10 &amp; 11 is as follows:</p> <table border="1" data-bbox="861 627 1484 1456"> <thead> <tr> <th colspan="3">IRSEM Para no: 21.1.21 Timers in Various circuits - Table-1</th> </tr> <tr> <th>S. No.</th> <th>Description</th> <th>Delay in seconds</th> <th>Conditions/Remarks</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>Opening of LC gate signal between 180 - 200m from LC)</td> <td>60</td> <td>1) Timer shall start on putting back the Gate signal. 2) If two track circuits are provided to prove that train has passed beyond LC gate, such sequential proving is adequate to open LC gate immediately without waiting for completion of 60 seconds.</td> </tr> <tr> <td>11</td> <td>Opening of LC gate signal at more than 180-200 m from LC)</td> <td>120</td> <td>1) Timer shall start on putting back the Gate signal. 2) If two track circuits are provided to prove that train has passed beyond, LC gate, such sequential proving is adequate to open LC gate without waiting for completion of 120 seconds.</td> </tr> </tbody> </table>	IRSEM Para no: 21.1.21 Timers in Various circuits - Table-1			S. No.	Description	Delay in seconds	Conditions/Remarks	10	Opening of LC gate signal between 180 - 200m from LC)	60	1) Timer shall start on putting back the Gate signal. 2) If two track circuits are provided to prove that train has passed beyond LC gate, such sequential proving is adequate to open LC gate immediately without waiting for completion of 60 seconds.	11	Opening of LC gate signal at more than 180-200 m from LC)	120	1) Timer shall start on putting back the Gate signal. 2) If two track circuits are provided to prove that train has passed beyond, LC gate, such sequential proving is adequate to open LC gate without waiting for completion of 120 seconds.	<p>Agreed as recommended</p>
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S. No.	Description	Delay in seconds	Conditions/Remarks														
10	Opening of LC gate signal between 180 - 200m from LC)	60	1) Timer shall start on putting back the Gate signal. 2) If two track circuits are provided to prove that train has passed beyond LC gate, such sequential proving is adequate to open LC gate immediately without waiting for completion of 60 seconds.														
11	Opening of LC gate signal at more than 180-200 m from LC)	120	1) Timer shall start on putting back the Gate signal. 2) If two track circuits are provided to prove that train has passed beyond, LC gate, such sequential proving is adequate to open LC gate without waiting for completion of 120 seconds.														

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1227	<p><b>Modification in IRSEM Para 19.8.9 (i) in sync with RDSO typical Circuits for Crank Handle Interlocking</b></p> <p>IRSEM Para 19.8.9 (i) :- Crank Handle Interlocking- It shall be checked that when the crank handle is removed from its normal position in Electric Key Transmitter/other approved Relay interlocking arrangement, the signals reading over the concerned route/zone cannot be taken 'OFF' nor the points can be operated from the cabin/panel. Proposed: SEM Para no 19.8.9 (i) may be corrected to comply and in sync with RDSO typical circuits (SigDate i.e. Points can be operated from the VDU/Panel when concerned crank has been removed/OUT). Remarks:- As per RDSO typical circuits generated with Sig Date tool, points can be operated from VDU/Panel when concerned crank handle has been removed/OUT. Hence suggested for correction.</p>	<p>Based on deliberations, SSC recommends following: It is seen that para 19.8.9(i) and para 21.1.12(b) of IRSEM are contradictory to each other regarding operation of point from panel when CH key has been taken out. Therefore, IRSEM para 19.8.9 (i) should be modified as follows: "It shall be checked that when the crank handle is removed from its normal position in Electric Key Transmitter/other approved Relay interlocking arrangement, the signals reading over the concerned route/zone cannot be taken 'OFF' nor the points can be operated from the cabin/panel. It shall also be checked that when the signal reading over the concerned route/zone is taken 'OFF', the crank handle cannot be released from its normal position in Electric Key Transmitter/other approved Relay interlocking arrangement."</p>	Agreed as recommended.
1228	<p><b>Use of XLPE Cables:</b></p> <p>Cables procurement and laying in yard and section is a time taking and involved processes, the insulation quality and overall weathering performance give present PVC cable a codal life of 20 yrs but end of life performance of PVC cable is poor. Proposed Solution: • XLPE cable can be used in placed of PVC cable. This will provide better life expectancy for the cable and better IR value &gt;10000 Mohm/km compared to 100 Mohm/km of PVC • Specification No. IRS:S 63/2014 (Rev.4) PVC Insulated, Underground,</p>	<p>Based on deliberations, SSC recommends following: Trial of XLPE insulated cable should be done in 2-3 stations in each Zonal Railway and performance feedback may be evaluated after one year for considering its adoption over Indian Railways.</p>	Agreed as recommended.



Item No.	SSC Agenda Item	SSC recommendations	Board's view on SSC recommendation
1229	<p>Unscreened Cable for Railway Signalling For has been issued for Trial Purpose only with limited trial quantity. The trial may be proliferated for higher quantity for better appreciation of the quality.</p> <p><b>SSC Agenda Item</b></p> <p><b>Review of IRSEM Para 21.1.10 (b) regarding Starter Released by Adv. Starter locking:</b></p> <p>IRSEM Para 21.1.10 Locking of Advanced Starter and Starter Signal at Junction Stations :</p> <p>(a) Starter released by Advance starter is not required at way side stations having single &amp; double line block working, where track circuiting have been completed.</p> <p>(b) Starter released by Advance starter is required at all diverging ends of junction stations, stations having twin single line block working and also at stations where track circuiting has not been provided between starter and Advance Starter.</p> <p>Ref: Rly Bd's Safety Dte letter no. 95/Safety-1/23/7 dtd.12.07.2010</p> <p>Review Interlocking for other than 'Twin Single Line' &amp; 'Non Track Circuiting between Starter Signal &amp; Adv'.</p>	<p>Based on deliberations, SSC recommends following:            "Existing provision in IRSEM para 21.1.10 (b) regarding Starter Released by Adv. Starter locking should be followed."</p>	<p>Agreed as recommended.</p>
1230	<p>Six quad PLJF cable 0.9 mm dia to be used for feeding both Signals and MSDAC.</p>	<p>Based on deliberations, SSC recommends following:            Since current flowing in signaling circuit is very high and also during lightening, performance of Quad Cable in Signalling circuit has not been ensured and also based on deliberations above, SSC recommends to drop the proposal of using Quad/PLJF Cable for Signaling purpose.</p>	<p>Agreed as recommended.</p>

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