



भारतसरकार- रेल मंत्रालय Govt. of India – Ministry of Railways  
भारतीय रेल सिगनल इंजीनियरी और दूरसंचार संस्थान  
Indian Railways Institute of Signal Engineering and Telecommunications  
तारनाका रोड, सिकंदराबाद Tarnaka Road, Secunderabad – 500017 (भारत)(INDIA)

IRISSET/CoE/Kavach/Misc

Date:31.01.2024

PED /Traction/RDSO

ED/Tele-II/RDSO, Secunderabad


Sub: Proposed maintenance activities for Onboard Kavach

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CoE has prepared the draft maintenance activities related to Onboard Kavach as a guideline for the maintenance staff so as to ensure safety and reliability of locomotives equipped with Kavach.

RDSO is requested to examine and issue the same <sup>to</sup> ~~for~~ zonal railways for implementation.

Encl: Copy of draft maintenance schedule of Onboard Kavach

  
31.01.24

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C/- Medha, HBL, Kernex, GG Tronics and QFTL : for kind information and to offer remarks/comments

	Maintenance activities during minor/major schedules in locomotives equipped with Kavach(TCAS)									
	Loco No :	Date:				Identified Schedule in which the activity shall be carried out				
S.No	Description of the Equipment's	Parameter for quality check	Details of work done		Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
			Cab 1	Cab 2						
	On Locomotive									
1.1.1	LPOCIP	Cleanliness				✓	✓	✓	✓	✓
1.1.2		Physical condition				✓	✓	✓	✓	✓
1.1.3		Fixing condition					✓	✓	✓	✓
1.1.4		Open all couplers and check the intactness of couplers and its pins.							✓	✓
1.1.5		Ensuring of correct wheel diameter as per the wheel diameter measurement carried out by shed.					✓	✓	✓	✓
1.2.1	Cab Radio Display Unit (If applicable)	Cleanliness				✓	✓	✓	✓	✓
1.2.2		Physical condition				✓	✓	✓	✓	✓
1.2.3		Fixing condition					✓	✓	✓	✓
1.2.4		Open all couplers and check the intactness of couplers and its pins.							✓	✓

		Maintenance activities during minor/major schedules in locomotives equipped with Kavach(TCAS)								
	Loco No :	Date:				Identified Schedule in which the activity shall be carried out				
S.No	Description of the Equipment's	Parameter for quality check	Details of work done		Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
			Cab 1	Cab 2						
2.1.1	Buzzer	Cleanliness					✓	✓	✓	✓
2.1.2		Physical condition					✓	✓	✓	✓
3.1.1	Radio Unit	Cleanliness					✓	✓	✓	✓
3.1.2		Physical condition					✓	✓	✓	✓
3.1.3		Intactness of Connectors and Couplers					✓	✓	✓	✓
3.1.4		Fixing condition					✓	✓	✓	✓
4.1.1	LTE Router-1 (If applicable)	Cleanliness					✓	✓	✓	✓
4.1.2		Physical condition					✓	✓	✓	✓
4.1.3		Intactness of Connectors and Couplers					✓	✓	✓	✓
4.1.4		Fixing condition					✓	✓	✓	✓
5.1.1	LTE Router-2 (If applicable)	Cleanliness					✓	✓	✓	✓
5.1.2		Physical condition					✓	✓	✓	✓
5.1.3		Intactness of Connectors and Couplers					✓	✓	✓	✓
5.1.4		Fixing condition					✓	✓	✓	✓

	Maintenance activities during minor/major schedules in locomotives equipped with Kavach(TCAS)									
	Loco No :	Date:				Identified Schedule in which the activity shall be carried out				
S.No	Description of the Equipment's	Parameter for quality check	Details of work done		Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
			Cab 1	Cab 2						
6.0	Brake interface									
6.1.1	Interface Relay Unit	Intactness of Mounting					✓	✓	✓	✓
6.1.2		Intactness of connectors					✓	✓	✓	✓
6.1.3		Visually inspect the condition of Relays inside interface relay unit for any sulphation marks								✓
6.2.1	EP Relay valve	Air leakage					✓	✓	✓	✓
6.2.2		Wiring terminations					✓	✓	✓	✓
6.2.3		Cleanliness					✓	✓	✓	✓
6.3.1	EP Relay valve isolating cock	Air leakage					✓	✓	✓	✓
6.3.3		Cleanliness					✓	✓	✓	✓
6.3.4		Labelling OK						✓	✓	✓
6.4.1	Piping for Transducers and EP Valve	Check the intactness of connectors and ferrules and attend if require							✓	✓
6.4.2		Check the leakages with Soap Water							✓	✓

	<b>Maintenance activities during minor/major schedules in locomotives equipped with Kavach(TCAS)</b>									
	Loco No :	Date:				Identified Schedule in which the activity shall be carried out				
S.No	Description of the Equipment's	Parameter for quality check	Details of work done		Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
			Cab 1	Cab 2						
6.5.1	Isolating Cocks	Ensure Proper Operation of Isolation Cocks and Handles							✓	✓
6.6.1	Horn Circuit	Check the proper condition of Horn EP coil piping							✓	✓
6.6.2		Check working of Horn Isolation Cock for any leakage							✓	✓
6.7.1	Testing of Transducers (Cab-1 only)	Ensure proper recording of pressures through Transducers by comparing with Data logging in Onboard Kavach. (Cab-1 only)							✓	✓
	<b>Underframe</b>									
7.1.1	RFID Reader	Cable Conduit clamping condition				✓	✓	✓	✓	✓
7.1.2		RFID Reader Mounting fixture welding Intactness (visual check)				✓	✓	✓	✓	✓
7.1.3		Ensure intactness of welding by Magnetic particle testing/DPT						✓	✓	✓
7.1.4		Availability and intactness of Sling for RFID Reader					✓	✓	✓	✓

	<b>Maintenance activities during minor/major schedules in locomotives equipped with Kavach(TCAS)</b>									
	Loco No :	Date:				Identified Schedule in which the activity shall be carried out				
S.No	Description of the Equipment's	Parameter for quality check	Details of work done		Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
			Cab 1	Cab 2						
7.1.5		Intactness of Guard for RFID reader					✓	✓	✓	✓

	<b>On Locomotive (As per availability)</b>				Identified schedule in which the activity shall be carried out				
			Details of work done( only one item per locomotive)	Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
8.1.1	Onboard Kavach	Cleanliness				✓	✓	✓	✓
8.1.2		Physical condition				✓	✓	✓	✓
8.1.3		Intactness of Connectors and Couplers				✓	✓	✓	✓
8.1.4		Fixing condition				✓	✓	✓	✓
8.1.5		Feeding/ensuring of correct wheel dia. As per the wheel dia. Measurement carried out by Shed				✓	✓	✓	✓
8.1.6		Remove all connectors/couplers and examine the intactness of connectors/couplers						✓	✓
8.2.1	Counter Readings	Note EB counter reading				✓	✓	✓	✓
8.2.2		Note Isolation counter reading				✓	✓	✓	✓
8.2.3		Note SOS counter reading				✓	✓	✓	✓
8.3.1	CAB Input Box(If Applicable)	Cleanliness				✓	✓	✓	✓
8.3.2		Physical condition				✓	✓	✓	✓
8.3.3		Intactness of Connectors and Couplers				✓	✓	✓	✓
8.3.4		Fixing condition				✓	✓	✓	✓

	Loco no.	Date:			Identified schedule in which the activity shall be carried out				
Sl.no.	Description of the equipments's:	Parameter to be checked:	Details of work done (only one item per locomotive)	Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
8.4.1	E70 Interface Unit(If applicable)(HBL)	Cleanliness				✓	✓	✓	✓
8.4.2		Physical condition				✓	✓	✓	✓
8.4.3		Intactness of Connectors and Couplers				✓	✓	✓	✓
8.4.4		Fixing condition				✓	✓	✓	✓
8.5.1	MCBs (2 nos)	Check Working and Tripping of MCBs on Test Bench						✓	✓
9.1.1	LE Valve	Fixing condition						✓	✓
9.1.2		Overhauling of LE Unit						✓	✓
10.1.1	Isolation Box	If Isolation box kept in Isolation position whether LPOCIP is indicating the status or not				✓	✓	✓	✓
10.1.2		Cleanliness				✓	✓	✓	✓
10.1.3		Physical condition				✓	✓	✓	✓
	<b>Underframe</b>								
11.1.1	Speed Sensor I	Visual check of Speed Sensor Cables			✓	✓	✓	✓	✓
11.1.2		Physical condition of PG mounting and Junction box			✓	✓	✓	✓	✓



		Date:			Identified schedule in which the activity shall be carried out				
		Parameter to be checked:	Details of work done	Remarks	Trip	IA/IB	IC	TOH/AOH	IOH/POH
11.1.3		Remove the speed sensor and clean any excess grease					✓	✓	✓
11.2.1	Speed Sensor II	Visual check of Speed Sensor Cables			✓	✓	✓	✓	✓
11.2.2		Physical condition of PG mounting and Junction box			✓	✓	✓	✓	✓
11.2.3		Remove the speed sensor and clean any excess grease					✓	✓	✓
	<b>Roof</b>								
12.1.1	GSM/GNSS(GPS) Antenna on roof (In some makes only one unit available)	Physical condition				✓	✓	✓	✓
12.1.2		Cable conduit clamping condition				✓	✓	✓	✓
			Antenna-1	Antenna-2					
13.1.1	Antennae on Roof of CAB1	Physical condition				✓	✓	✓	✓
13.1.2		Cable Conduit clamping condition				✓	✓	✓	✓
13.1.3		Checking Reverse Power status				✓	✓	✓	✓
13.2.1	Antennae on Roof of CAB2	Physical condition				✓	✓	✓	✓
13.2.2		Cable Conduit clamping condition				✓	✓	✓	✓
13.2.3		Checking Reverse Power status				✓	✓	✓	✓
			Provided on top of same cab						
13.3.1	LTE Antenna-1 (If applicable)	Physical condition				✓	✓	✓	✓
13.3.2		Cable Conduit clamping condition				✓	✓	✓	✓

	Loco no.	Date:			Identified schedule in which the activity shall be carried out				
Sl.no.	Description of the equipment's	Parameter to be checked:	Details of work done	Remarks:	Trip	IA/IB	IC	TOH/AOH	IOH/POH
13.4.1	LTE Antenna-2 (If applicable)	Physical condition				✓	✓	✓	✓
13.4.2		Cable Conduit clamping condition				✓	✓	✓	✓
14.1	Data downloading from Onboard Kavach	Data downloading for analysing				✓	✓	✓	✓
14.2	System Functionality	Testing as per the Station Kavach Layout in Shed(in Trip sheds subject to availability of Station Kavach)			✓	✓	✓	✓	✓