

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**LOK SABHA
UNSTARRED QUESTION NO. 2612
TO BE ANSWERED ON 07.08.2024**

KAVACH SAFETY SYSTEM IN KANCHANJUNGA EXPRESS

2612. SHRI KHALILUR RAHAMAN:

Will the Minister of RAILWAYS be pleased to state:

- (a) whether it is true that the train accident on 17th June 2024 involving Kanchanjunga Express was due to signal failure, if so, the details thereof;**
- (b) whether walkie-talkie has not been made available to the loco pilots and the train manager, if so, the reasons therefor;**
- (c) whether it is a fact that since 1st April 2019 till 31st March 2024 there has been 208 cases of Signal Passed at Danger(SPAD) which resulted in 12 accidents, if so, the details thereof;**
- (d) whether there was Kavach Safety system in the express train, if so, the details thereof; and**
- (e) if not, the reasons therefor?**

ANSWER

**MINISTER OF RAILWAYS, INFORMATION & BROADCASTING AND
ELECTRONICS & INFORMATION TECHNOLOGY
(SHRI ASHWINI VAISHNAW)**

(a) to (e): A Statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (e) OF UNSTARRED QUESTION NO. 2612 BY SHRI KHALILUR RAHAMAN TO BE ANSWERED IN LOK SABHA ON 07.08.2024 REGARDING KAVACH SAFETY SYSTEM IN KANCHANJUNGA EXPRESS

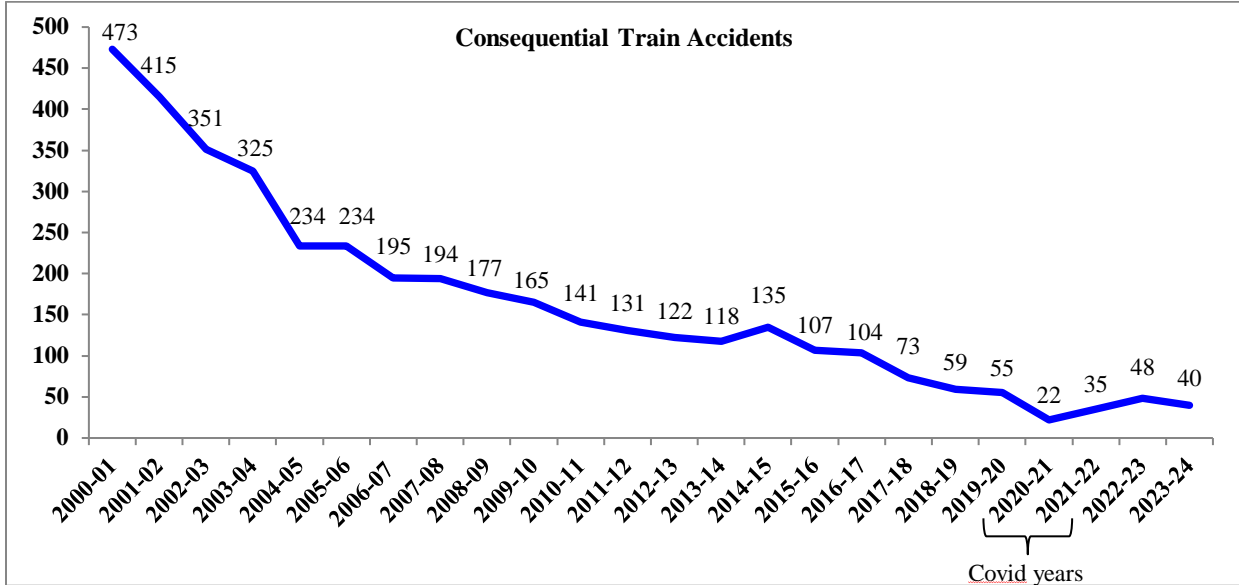
(a) to (e): The Chief Commissioner of Railway Safety (CCRS) has inquired into accident of Kanchenjunga Express Train on 17.06.2024 and have informed to Indian Railways in its preliminary report that Rear end collision between Train No. DN 13174 Kanchanjunga Express and DN GFCJ Container in Katihar Division of N.F Railway at 08:50 hrs on 17.06.2024 occurred due to lapses at multiple levels in managing the train operations under Automatic Signal failures.

Presently, 81931 walkie-talkie sets are available for Loco Pilots, Assistant Loco Pilots and Train Managers over Indian Railways. There was shortage of walkie-talkie sets in New Jalpaiguri (NJP) lobby but the same has been resolved as on date.

As a consequence of various safety measures taken over the years, there has been a steep decline in the number of accidents. Consequential Train Accidents, which include accidents due to Signal Passing at Danger (SPAD) also, have reduced from 473 in 2000-01 to 40 in 2023-24 as shown in graph below. Derailments also, have reduced from 473 in 2000-01 to 40 in 2023-24 as shown in the graph below.

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-:2:-



Safety is accorded the highest priority on Indian Railways. The various safety measures taken to enhance safety in train operations are as under:-

- 1. On Indian Railways, the expenditure on Safety related works has increased over the years as under:**

(₹ in Crores)

	2022-23 (Act)	2023-24(Act)	BE 2024-25
Maintenance of Permanent Way & Works	18115	20322	21386
Maintenance of Motive Power and Rolling Stock	27086	30864	31494
Maintenance of Machines	9828	10772	11864
Road Safety LCs and ROBs/RUBs	5347	6662	9980
Track Renewals	16326	17850	17652
Bridge Works	1050	1907	2137
Signal & Telecom Works	2456	3751	4647
Workshops Incl. PUs and Misc. expenditure on Safety	7128	9534	9634
Total	87336	101662	108795

Cont...3/-

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- 2. Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6,589 stations up to 30.06.2024 to eliminate accident due to human failure.**
- 3. Interlocking of Level Crossing (LC) Gates has been provided at 11,048 level Crossing Gates up to 30.06.2024 for enhancing safety at LC gates.**
- 4. Complete Track Circuiting of stations to enhance safety by verification of track occupancy by electrical means has been provided at 6,609 stations up to 30.06.2024.**
- 5. Kavach is a highly technology intensive system, which requires safety certification of highest order. Kavach was adopted as a National ATP system in July 2020. Kavach has so far been deployed on 1465 Route km and 144 locomotives (including Electric Multiple Unit rakes) on South Central Railway. Kavach is provided progressively in phased manner.**
- 6. Axle counters for Automatic clearance of Block Section, BPAC (Block Proving Axle Counter) are provided to ensure complete arrival of train without manual intervention before granting line clear to receive next train and to reduce human element. These systems have been provided on 6079 Block Sections upto 30.06.2024.**

Cont...4/-

- 7. A project for provision of Long Term Evolution (LTE) based Mobile Train Radio Communication system has been approved for 34,803 Rkms over Indian Railways.**
- 8. The project for provision of Tunnel Communication has been taken up in various zonal Railways.**
- 9. Emergency talk-back system and Emergency Alarm Systems have been provided in Vande Bharat Train sets.**
- 10. CCTVs have been provided in all Vande Bharat Express coaches. Till date more than 9572 coaches are equipped with CCTV.**
- 11. Detailed instructions on issues related with safety of Signalling e.g. mandatory correspondence check, alteration work protocol, preparation of completion drawing, etc. have been issued.**
- 12. System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.**
- 13. All locomotives are equipped with Vigilance Control Devices (VCD) to improve alertness of Loco Pilots.**
- 14. Retro-reflective sigma boards are provided on the mast which is located two OHE masts prior to the signals in electrified territories to alert the crew about the signal ahead when visibility is low due to foggy weather.**
- 15. A GPS based Fog Safety Device (FSD) is provided to loco pilots in fog affected areas which enables loco pilots to know the distance of the approaching landmarks like signals, level crossing gates etc.**

- 16. Modern track structure consisting of 60kg, 90 Ultimate Tensile Strength (UTS) rails, Pre-stressed Concrete Sleeper (PSC) Normal/Wide base sleepers with elastic fastening, fan-shaped layout turnout on PSC sleepers, Steel Channel/H-beam Sleepers on girder bridges is used while carrying out primary track renewals.**
- 17. Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc to reduce human errors.**
- 18. Maximizing supply of 130m/260m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby improving safety.**
- 19. Ultrasonic Flaw Detection (USFD) testing of rails to detect flaws and timely removal of defective rails.**
- 20. Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e. Flash Butt Welding.**
- 21. Monitoring of track geometry by OMS (Oscillation Monitoring System) and TRC (Track Recording Cars).**
- 22. Patrolling of railway tracks to look out for weld/rail fractures.**
- 23. The use of Thick Web Switches and Weldable CMS Crossing in turnout renewal works.**
- 24. Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.**

- 25. Web based online monitoring system of track assets viz. Track database and decision support system has been adopted to decide rationalized maintenance requirement and optimize inputs.**
- 26. Detailed instructions on issues related with safety of Track e.g. integrated block, corridor block, worksite safety, monsoon precautions etc. have been issued.**
- 27. Preventive maintenance of railway assets (Coaches & Wagons) is undertaken to ensure safe train operations.**
- 28. Replacement of conventional ICF design coaches with LHB design coaches is being done.**
- 29. All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.**
- 30. Safety of Railway Bridges is ensured through regular inspection of Bridges. The requirement of repair/rehabilitation of Bridges is taken up based upon the conditions assessed during these inspections.**
- 31. Indian Railways has displayed Statutory "Fire Notices" for widespread passenger information in all coaches. Fire posters are provided in every coach so as to educate and alert passengers regarding various Do's and Don'ts to prevent fire. These include messages regarding not carrying any inflammable material, explosives, prohibition of smoking inside the coaches, penalties etc.**

32. Production Units are providing Fire detection and suppression system in newly manufactured Power Cars and Pantry Cars, Fire and Smoke detection system in newly manufactured coaches. Progressive fitment of the same in existing coaches is also underway by Zonal Railways in a phased manner.

33. Regular counselling and training of staff is undertaken.

34. Concept of Rolling Block introduced in Indian Railways (Open Lines) General Rules vide Gazette notification dated 30.11.2023, wherein work of integrated maintenance/ repair/ replacement of assets is planned up to 52 weeks in advance on rolling basis and executed as per plan.

The details of Safety related works undertaken by Railways are tabulated below:-

SN	Item	2004-05 to 2013-14	2014-15 to 2023-24	2014-24 vs 2004-14
	Track Maintenance			
1.	Expenditure on Track Renewal (Rs. in Cr.)	47,018	1,09,659	2.33 times
2.	Rail Renewal Primary (Track Km)	32,260	43,335	1.34 times
3.	Use of high-quality rails (60 Kg) (Km)	57,450	1,23,717	2.15 times
4.	Longer Rail Panels (260m) (Km)	9,917	68,233	6.88 times
5.	USFD (Ultra Sonic Flaw detection) Testing of Rails (Track km)	20,19,630	26,52,291	1.31 times
6.	USFD (Ultra Sonic Flaw detection) Testing of Welds (Nos.)	79,43,940	1,73,06,046	2.17 times

7.	New Track KM added (Track km)	14,985	31,180	2.08 times
8.	Weld failures (Nos.)	In 2013-14: 3699	In 2023-24: 481	87% reduction
9.	Rail fractures (Nos.)	In 2013-14: 2548	In 2023-24: 383	85% reduction
10	Thick Web Switches (Nos.)	Nil	21,127	
11	Track Machines (Nos.)	As on 31.03.14 = 748	As on 31.03.24 = 1,661	122% increase
Level Crossing Gate Elimination				
1.	Elimination of Unmanned Level Crossing Gates (Nos.)	As on 31.03.14: 8948	As on 31.03.24: Nil (All eliminated by 31.01.19)	100% reduction
2.	Elimination of Manned Level Crossing Gates (Nos.)	1,137	7,075	6.21 Times
3.	Road over Bridges (RoBs)/ Road under Bridges (RUBs) (Nos.)	4,148	11,945	2.88 Times
4.	Expenditure on LC Elimination	5,726	36,699	6.40 Times
Bridge Rehabilitation				
1.	Expenditure on Bridge Rehabilitation (Rs. in Cr.)	3,919	8,008	2 Times
Signaling Works				
1.	Electronic Interlocking (Stations)	837	2,964	3.52 times
2.	Automatic Block Signaling (Km)	1,486	2,497	1.67 times
3.	Fog Pass Safety Devices (Nos.)	As on 31.03.14: 90	As on 31.03.24: 19,742	219 times

Rolling Stock				
1.	Manufacture of LHB Coaches (Nos.)	2,337	36,933	15.80 times
2.	Provision of Fire and Smoke Detection System in AC coaches (Nos. of Coaches)	0	19,271	
3.	Provision of Fire Detection and Suppression System in Pantry and Power Cars (Nos. of Coaches)	0	2,991	
4.	Provision of Fire Extinguishers in Non -AC coaches (Nos. of Coaches)	0	66,840	
Budget allocation				
1	Gross Budgetary Support for Railway Investment (Rs. in Cr.)	1,56,739	8,25,967	5.3 times

It may noted that the Signal Passed at Danger (SPAD) is not an accident but is treated as an indicative accident which in real term is just a potential hazard.

The no. of cases of Signal Passed at Danger (SPAD), since 01.04.2019 till 31.03.2024, has decreased from 57 in 2019-20 to 38 in 2023-2024.

Kavach is an indigenously developed Automatic Train Protection (ATP) system. Kavach is a highly technology intensive system, which requires safety certification of highest order.

Kavach aids the loco pilot in train running within specified speed limits by automatic application of brakes in case Loco Pilot fails to do so and also helps the train to run safely during inclement weather.

Implementation of Kavach involves execution of many activities, such as:

- (a) Installation of Station Kavach at each and every station.**
- (b) Installation of RFID tags throughout the track length.**
- (c) Installation of Telecom Towers throughout the section.**
- (d) Laying of optical Fibre cable along the track.**
- (e) Provision of Loco Kavach on Locomotives running on Indian Railways.**

Kavach has so far been deployed on 1465 Route km and 144 locomotives on South Central Railway.

Presently, the progress of main items related to Kavach on Delhi–Mumbai & Delhi– Howrah corridors (approximately 3000 Route km) is as under:

- (a) Laying of Optical Fibre Cable: 4275 Km**
- (b) Installation of Telecom Towers: 364 Nos.**
- (c) Provision of equipment at Stations: 285 Nos.**
- (d) Provision of equipment in Loco: 319 Locos**
- (e) Installation of Track side equipments: 1384 Rkm.**

Indian Railways has also prepared Detailed Project Report (DPR) and Detailed Estimate on another 6000 Rkm.

On 16.07.2024, Kavach 4.0 specification has been approved by RDSO. This version covers all the major features required for the diverse railway network. This is a significant milestone in safety for Indian Railways. Within a short period, IR has developed, tested and started deploying Automatic Train Protection System.

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Kavach is provided progressively in phased manner. Kanchanjunga Express accident took place in New Jalpaiguri - Barsoi - Malda Town section. CRS Inquiry has been ordered in cases of Kanchanjunga Express Train Accident.
