



सत्यमेव जयते

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No. EL/3.2.19/3-Phase

All General Managers,
Zonal Railways.
Managing Directors,
DFCCIL & KRCL.



Date: 10.05.2022

Sub: Running of loaded trains (more than 3000T) BOXNHL and similar rakes with BMBS.
Ref: Railway Board's L/No. 2017/Elect(TRS)/113/Safety Misc dated 11.9.2017.

- 1.0 Railways have reported incidents of poor/inadequate brake power of BOXNHL and similar rakes provided with BMBS vis-a-vis brake power of BOXNM1 wagons with underframe mounted brakes. Further to Railway Board's instructions vide letter under reference (copy enclosed), the following is advised on the subject.
- 2.0 A comparative position of estimated EBD of BOXNM1 rake (underframe mounted conventional rake) and BOXNHL rake (Bogie mounted brake system with APM) through STOP simulation is placed below:

Type of Rake (Brake Power)	Level Track	Gradient 1 in 100	
	75 kmph	50 kmph	60 kmph
BOXNM1 (85%)	735 m	492 m	662 m
BOXNHL (BMBS) (85%)	<u>868 m</u> ✓	592 m	822 m

- 2.1 It may be seen that the braking distance of BOXNHL rake provided with BMBS is more than that of BOXNM1 with underframe mounted brake system. On level track, this difference is about 18% and on down gradient of 1 in 100 at 50 kmph, the difference in braking distance is 20.32 % (approx.) and at 60 kmph, it is 24.2 %.
- 3.0 Brake Pressure drop of 1kg/cm² in BMBS rakes is nearly equivalent to 0.8 kg/cm² drop in case of underframe mounted brake. Similarly, 1.2 kg/cm² drop of BP pressure is nearly equivalent to 1 kg/cm² drop in underframe mounted brake system and 1.6 kg/cm² drop in BMBS is equivalent to 1.2 kg/cm² drop of underframe mounted brakes.
- 4.0 In view of above, following instructions may be followed in case of running of loaded trains of more than 3000 T provided with BMBS.

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मु.का.इंजी.
मु.या.इंजी./योजना
मु.च.स्टॉ.इंजी./फेट.
मु.च.स्टॉ.इंजी./कोचिंग
मु.चा. शक्ति इंजी.
मु.वि. सर्विस इंजी.
उप मु.या. इंजी./मुख्यालय
निजी सचिव/प्र.मु.या.इंजी.

Zonal Railways shall conduct trials and specify the attacking speed for operation of such trains on down gradients. The attacking/approaching speed should be based on the topography and layout of signals.

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- 4.2 The Loco Pilots shall be counseled to control the loaded trains (more than 3000 T) with minimum brake pressure drop of 1kg/cm². Regenerative/Dynamic braking may also be used as per requirement to control the speed especially on down gradients.
- 4.3 The Loco Pilots shall be counseled that in case it is felt that Train is not getting controlled with Full Service Brakes through A9, then shall apply Emergency Brakes through A9 as well as RS/Flap valve should also be immediately opened.
- 4.4 The Loco Pilots shall be counseled to call Train Manager through VHF or any other means to apply emergency brakes immediately from Brake Van also. Proper functioning of VHF sets should be ensured by Zonal Railways.
- 4.5 Zonal railways shall endorse in BPC the type of rake (whether BMBS or conventional or mixed-BMBS and conventional) and the number of wagons with BMBS in the rake.
- 4.6 Instructions regarding 100% BPC during CC examination shall be strictly adhered to.
- 4.7 All maintenance instructions regarding the correct functioning of APM and adjustment of gap as prescribed shall be strictly ensured.
- 4.8 Ensure timely replacement of worn out brake blocks.
- 4.9 Twin pipe working of rakes with BMBS should be ensured.

Zonal Railways are advised to adhere to aforesaid instructions for operation of rakes provided with BMBS on their system.

Encl: Ref.

Manish Thaplyal
(Manish Thaplyal)
ED/Wagon/RDSO

Sunil Kumar
10/5/22
(Sunil Kumar)
PED/Traction/RDSO

Copy/- Member Traction & Rolling Stock, Railway Board... for kind information.

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

No. 2017/Elect(TRS)/113/Safety Misc.

New Delhi, dated : 11.09.2017

General Manager,

All Zonal Railways & CMD/KRCL

Sub : SPAD cases involving BOXNHL loaded rakes - Controlling trains provided with Bogie Mounted Brake System (BMBS)

During performance review meeting by Board with a General Managers through video conferencing on 09.08.2017, few railways raised the concern about Signal Passing at Danger (SPAD) cases involving BOXNHL rakes in loaded conditions. These rakes are provided with Bogie Mounted Brake System (BMBS) with twin pipe brake system on the wagons.

In order to avoid repeated cases, Running Staff (LPs, ALPs & Guards) should be counseled through Loco Inspectors on the following:

- (i) In rakes provided with twin brake system, brake will release very quickly as compared to the release time for a conventional single pipe air brake trains.
- (ii) To achieve desired control over the train while applying brakes to minimum reduction or service application, A9 handle has to be kept in the applied position for a longer time compared to a single pipe brake system.
- (iii) BOXNHL rake fitted with BMBS system has a higher emergency braking distance when compared to BOXNM 1 rake.
- (iv) As rakes with twin pipe and BMBS system have different emergency braking distance, release time and application time, so, it is essential that the loco pilot feels the brake power on the formation duty conducting brake feel test and brake power test at the first instance as per the prescribed guidelines.
- (v) BOXNHL rakes are provided with Automatic Pressure Modification (APM) devise in lieu of Empty /load box system to automatically adjust the brake cylinder pressure in Empty /loaded condition. APM is more reliable and fail safe equipment when compared to the pressure transformer /load sensing devise.

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CAMTECH has published a handbook on Bogie Mounted Brake system for Freight Stock in September, 2012. Copy of the booklet is available in SIMS portal (in SMDMS at <http://www.safety.indianrail.gov.in>) and in eLocoS website (under Operation/Safety head <http://elocos.railnet.gov.in> may be downloaded for circulation among all the concerned.

It is also advised that information / instructions on Bogie Mounted Brake system should also be incorporated in all training curriculums of running staff.

(S.K. Singh) 12/9/17

Exec. Dir. Elect. Engg. (RS)
Railway Board

Copy to:

Director General, RDSO, Manak Nagar, Lucknow - For improving the design of BMBS in such a way that increase in Emergency Braking Distance (EBD) is avoided.



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13/9/17

Please circulate to All zonal Rlys, KAC and RDSO.

Stamp: Ministry of Railways, Railway Board, 13/9/17, Date of Issue, 13/9/17