



No. MW/APB/BMB

Date: 05.01.2023

1. **The General Managers**
All Zonal Railways
2. **The Managing Directors**
DFCCIL & KRCL.

Sub: Committee's Report on Investigation of issues reported related to Brake Power in BOXNHL rakes and Recommendations made.

- Ref:** (i) Board's letters No. No.2022/M(N)/60/3 dated 24th Mar'22& 31st Mar'22
(ii) This office letter of even No. dated 04.05.2022
(iii) RDSO's letter no. MW/APB/BMB dated 15th July'22
(iv) Presentation by Committee members in Board on 20th July'22
(v) Board's letter No.2022/M(N)/60/3 New Delhi, dated: 23rd July'22
(vi) This office letter of even no. dated 06.09.2022.
(vii) This office letter no. MW/APB/BMB/Knorr dt. 30.12.2022.

1. Zonal Railways had reported issue of **poor brake power and erratic braking behaviour of BMBS**. The issue had been investigated by RDSO and it was found that the BMBS supplied by **M/s KBIPL** has **lesser brake force** than specified. The erratic behaviour occurs in this design due to response of slack adjuster to higher than expected frictional resistance in the brake rigging system. It results in **malfunctioning of the slack adjuster at times** i.e. it does not 'pay out' as required or 'pays in' when not required. As such, the brake block does not fully grip the wheel during brake application.
2. The matter has been pursued with **M/s KBIPL**, who have now proposed following changes in the BMBS-
 - a. **Longer bearing cup** – to **increase the piston over stroke capability**.
 - b. **Additional Bush at front of Ram spring**- to increase the Ram spring force and hence capability of slack adjuster to **overcome higher frictional forces** in the system.
 - c. **Addition of stops on beams**- to centralize the beams during dynamic condition and **restrict the lateral movement of beam**.

Static trials of the modified BMBS have been completed. The modified BMBS with above mentioned modifications have been delivered to premises of a wagon builder and the instrumented trials are planned to be conducted in order to validate the efficacy of above modifications.

3. Various instructions have been issued in past to mitigate the poor brake power noticed in wagons provided with Bogie Mounted Brake System (BMBS) of M/s KBIPL type design. The same are **summarised below** for information and compliance by Zonal Railways.

3.1. Instruction for **Speed Restriction**

Speed limits for operation of freight trains in **loaded condition** on **IR track** consisting of **more than 50% wagons with** Bogie Mounted Brake System (**BMBS**) shall be as under:

| Sr. No. | Track terrain | Max. Speed limit (Kmph) |
|---------|--|-------------------------|
| 1 | Level | 60 |
| 2 | Down gradient of 1:200 to <1:150 | 50 |
| 3 | Down gradient of 1:150 to \leq 1:100 | 40 |
| 4 | Down gradient of >1:100 | 30 |

3.1.1 On **DFC**, the speed will be **up to 80 kmph for loaded** trains with **more than 50% wagons with BMBS**.

3.1.2 The **BPC** shall clearly mention the **percentage of wagons with BMBS in the train formation**.

3.2. Operations Related:

3.2.1 Actively pursue mixing of BOXNHL wagons having Knorr make BMBS with BOXNHL wagons having other make of BMBS/Conventional brake system to the extent possible, depending upon the availability of BOXNHL wagons having other make of BMBS/Conventional brake system, targeting max. 50% wagons with Knorr make BMBS in a freight train. It is a desirable condition, not a mandatory one.

Priority be given to rakes manufactured after 2019 and to those rakes in which incidents have been reported repeatedly.

3.2.2 For other than BOXNHL type of wagons having Knorr make BMBS, efforts to be made for **mixing with compatible wagons having other make of BMBS/Conventional brake system** to the extent possible, depending upon the availability of compatible wagons having other make of BMBS/Conventional brake system, **targeting max. 50% wagons having Knorr make BMBS in a freight train**. It is also a desirable condition, not a mandatory one.

Priority be given to rakes manufactured after 2019 and to those rakes in which incidents have been reported repeatedly.

3.2.3 **All wagons with BMBS are provided with twin pipe system** and **Railways are to run them in twin pipe mode**. Extant instructions of Board on the subject including those contained in RB letter No 2017/M/(N)/60/3 dated 19.04.2022 are to be followed.

3.2.4 The **Loco Pilots** shall be counselled on the following:

- (i) To control the **loaded trains (more than 3000 T)** with **minimum brake pressure drop of 1kg/cm². Regenerative/Dynamic braking** to be used as per requirement to control the speed.
- (ii) 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.
- (iii) 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.
- (iv) For not pressing of PVEF/pulling of Bail-off ring during Emergency Brake application.

3.3. **Maintenance related:**

3.3.1 **During ROH/POH, Zonal Railways should ensure checking of wagons for blockages in FP and BP pipes either through removal of dirt collector and conducting blow through from both the ends or through video scope wherein a camera is inserted into the pipes and visual seen on a hand held monitor.**

3.3.2 It should be ensured that 100% pistons are working and brake is being applied on all wagons while issuing BPC after CC examination. Efforts should be made to rectify non- working brake cylinders during course of any maintenance check. In mixed rakes i.e. with under frame mounted brakes and BMBS, the method of calculation of brake power on BPC should consider the under frame mounted brake cylinder as equivalent to two cylinders.

3.3.3 The Zonal Railways should ensure that the **APD fitted** in the BMBS system are of appropriate design and there is **no infringement with the primary brake beam** (Ref.: RDSO's letter no MW/APB/BMB dt 06.09.2022).

3.3.4 APM of Knorr design BMBS be bypassed and Zonal Railways shall submit trial report of running such rakes in terms of letter no.MW/APB/BMB/Knorr dt.30.12.2022.

3.3.5 Zonal Railways to procure **STRABURAGS NBU30 PTM Grease** and **apply it in brake beam pocket liners** in terms of this office letter no MW/APB/BMB/Knorr dt. 30.12.2022.

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Copy to : 1. **Member (T&RS)**, Railway Board - for kind information.

2. **EDME/Freight**, Railway Board - for information pl.