No. SD.WD4B.11  Dated 01-05-2008

The General Manager (Engg.),
1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
2. Eastern Railway, Fairlie Place, Kolkata-700 001.
3. Northern Railway, Baroda House, New Delhi-110 001.
7. South Central Railway, Rail Nilayam, Secunderabad-500 071.
8. South Eastern Railway, Garden Reach, Kolkata-700 043.
9. Western Railway, Churchgate, Mumbai-400 020.
10. North Central Railway-Allahabad-211 001
11. North Western Railway- Jaipur-302 006
13. East Coast Railway, Railway Complex, Bhubaneswar-751 023.
15. West Central Railway-Jabalpur-482 001.
16. South East Central Railway, Bilaspur-495 004.

Sub: Speed certificate for final maximum permissible speed of WDG4B class of locomotive on track maintained to other than C&M-I Vol.-I standard.

4000 hp WDG4 class of locomotives with Co-Co bogies originally imported from M/s General Motors, EMD, USA are now manufactured by DLW through transfer of technology. These locomotives are in regular operation over Indian Railways for the last eight years. The axle load of this locomotive is 21 t (+2%, -4%). To enable the movement of multiple unit WDG4 locomotives over Bridges of different types of spans in view of instructions issued by Railway Board regarding dispersion of braking forces on Bridges and based on the satisfactory oscillation trials results as contained in this office report no. MT-230 (of May 2000), WDG4 class of locomotive has been cleared up to a maximum speed of 105 km/h on track maintained to other than C&M-I Vol.-I standard vide this office letter no SD.WD4G.11 dated 12-08-2005 and subsequent amendments dated 14-10-2005 and 20-2-2007.

1.1 Passenger version of WDG4 locomotive has been manufactured by DLW with axle load of 20.2 t to exploit speed potential up to 130 km/h. This locomotive has been designated as WDP4B by Railway Board. The General arrangement of the locomotive is as per RDSO's drawing no. SK.DL.4684. (Alt.-a) and bogies general/suspension arrangements to drg. no. SK.VL-519 & SK.VL-520 respectively. All other design features of both the locomotives are identical except that the weight of under frame has been reduced to achieve reduced axle load of 20.2 t. The locomotive is fitted with two nos. 3-axle high adhesion bogie similar to that of existing WDG4 locomotive.
1.2 In view of this, Chief Commissioner of Railway Safety was approached to accord the sanction for dispensation with oscillation trial and permit the operation of WDP4B locomotive upto a maximum speed of 105 km/h on track maintained to other than C&M-I Vol.-I standard. Vide their letter no. Q-17016/03/2008-T.V. dated 26-3-2008, Chief Commissioner of Railway Safety has accorded sanction and permitted the operation of WDP4B locomotive on track maintained to other than C&M-I Vol.-I standard upto a maximum speed of 105 km/h.

2. Based on the above, it is certified that operation of single/double headed WDP4B class of locomotives may be permitted to run upto a maximum speed of 105 km/h on track maintained to other than C&M-I Vol.-I standard, subject to the following conditions:

2.1 Track

2.1.1 The track shall be to a minimum standard of 52kg rails on sleepers to M+7 density and depth of ballast cushion below sleepers of 250 mm, which may consist of at least 100 mm clean and the rest in caked up condition, on compacted and stable formation.

2.1.2 For track maintained to lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, Railway Board’s letter no. 65/WDO/ SR/26 dated 19/20.10.1966 may be seen. When the Chief Engineer considers that the road bed is not compacted or there is improper drainage, he may suitably restrict the maximum permissible speed depending upon the local conditions.

2.1.3 The maximum permissible speed on curves shall be decided on the basis of the Indian Railway Permanent Way Manual Second reprint-2004.

2.1.4 Wherever conditions warrant on account of corrosion on rail/weld collar, wear of rail, cupping in the welds necessary precautions should be taken for fish plating/joggle fish plating of the rail/weld.

2.1.5 Zonal Railways may impose such further restrictions of speed as deemed fit, based on the age and condition of track and the extent of rail fractures/weld failures/defect generation rate occurring in the sections.

2.2 Bridges

2.2.1 The clearance refers to bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG and MBG-1987 standard loadings. However the bearings of span 78.8m (effective) designed for BGML standard loading as per RDSO’s drawing no. BA-11154 should be strengthened by providing two additional anchor bolts.

2.2.2 Superstructures & bearings of non-standard spans including Arches and sub-structures of all bridges are to be examined under the directions of the Chief Bridge Engineer concerned and certified safe by him in terms of current IRS Bridge Rules, Steel Bridge
Code, Concrete Bridge Code, Arch Bridge Code, Bridge Sub-Structures and Foundation Code etc. read with up to date correction slips.

2.2.3 Zonal Railways to certify adequacy of existing bridges for permitting rolling stock based on physical condition of bridges by keeping them under observations considered necessary by the Chief Bridge Engineer of Railway.

2.2.4 Location of bridge or which speed restrictions are imposed shall be notified by the Railways and incorporated in the working timetable.

2.2.5 The double-headed operation is not being permitted in general. However, as a temporary measure, till the guidelines issued vide RDSO’s letter no. CBS/Golden/Q/Strength dated 30-12-2004 is followed, operation of double headed WDP4B locomotives be permitted, with above conditions.

2.2.6 The clearance is subject to following parameters of WDP4B locomotives:

    For single headed locomotive:
    i) Maximum axle load                           20.2t
    ii) Maximum tractive effort                     39.2t
    iii) Maximum dynamic braking force at rail level 26.25t
    iv) Maximum CG height from rail level           = Not exceeding 1830 mm

2.2.7 For double headed operation:

Track on bridges and approaches of BGML spans 13.1m, 25.6m, 31.9m, 47.3m, 63.0m and 78.8m RBG spans 13.1m and 47.3m (all effective) shall be strengthened or modified in such a way so as to allow for dispersion of longitudinal force as per clause 2.8.3.2 of IRS Bridge Rules. In cases where dispersion cannot be allowed as per Clause 2.8.3.2 such as due to provision of SEJ in bridges etc., the bridge superstructure including bearings and sub-structure shall be checked for longitudinal force without dispersion and certified safe by the Chief Bridge Engineer concerned.

2.3 Signalling

2.3.1 Provision of GR, SR, SEM and all extant instructions issued from time to time, shall be complied with.

2.3.2 On the sections where EBD of more than 1 km. is to be catered for, second distant signal or automatic signaling should be available failing which suitable speed restriction is to be imposed.

2.4 Traction Installation:

In 25kV a.c. traction area, the CEE of the concerned Railway shall have to ensure that the minimum height of contact wire and electrical clearances as stipulated in provision of Chapter-V and V-A, Electric Traction "Schedule of Dimensions of 1676mm gauge (BG) revised-2004" is not violated and strictly followed to ensure its safe running.
2.5 Rolling Stock

Before starting the operation, CME of the concerned railway will certify the track worthiness and safety of the rolling stocks. He will also ensure proper maintenance of the stocks.

2.6 General

2.6.1 All the permanent and temporary speed restrictions in force and those that may be imposed from time to time due to track, bridges, curves, signaling and interlocking, etc. shall be observed.

2.6.2 The profile of WDP4B class of locomotive does not infringe any clauses of Chapter(IV-C) of BG Schedule of Dimensions (Revised -2004).

Encl: i) drg. no. SK.DL – 4684 (Alt.—a)
   ii) drg. no. SK. VL- 519 & 520

Exe. Director Standards (Motive Power)

Copy to:

1. Secretary, (Mech./Engg. Gi) Railway Board, Rail Bhawan, New Delhi - 110001
2. The General Manager (Mech./Optg/S&T),
   .1 Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
   .2 Eastern Railway, Fairlie Place, Kolkata-700 001.
   .3 Northern Railway, Baroda House, New Delhi-110 001.
   .4 North Eastern Railway, Gorakhpur-273 001.
   .5 Northeast Frontier Railway, Maligaon, Guwahati-781 011.
   .6 Southern Railway, Park Town, Chennai-600 003.
   .7 South Central Railway, Rail Nilayam, Secunderabad-500 071.
   .8 South Eastern Railway, Garden Reach, Kolkata-700 043.
   .9 Western Railway, Churchgate, Mumbai-400 020.
   .10 North Central Railway-Allahabad-211 001
   .11 North Western Railway- Jaipur-302 006
   .12 East Central Railway- Hajipur-844 101.
   .13 East Coast Railway, Railway Complex, Bhubaneswar-751 023.
   .14 South Western Railway, Hubli-580 023.
   .15 West Central Railway, Jabalpur-482 001.
   .16 South East Central Railway, Bilaspur-495 004.
3. The General Manager (Mech), Diesel Locomotive Works, Varanasi - 221004
4. Managing Director, Konkan Railway Corporation, Belapur, Navi Mumbai- 400614

Encl: Nil

Exe. Director Standards (Motive Power)

Opr. of WDP4B on main line Mor' 08/3/KT-HD