

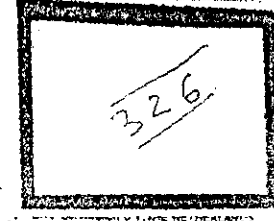
MC/RLC/D, S.No. 2149

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सत्यमेव जयते

भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011
Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226011



Dated 5-01-2006

No. SD. DMU.11

The General Manager (Engg.),
Northern Railway, Baroda House,
New Delhi-110 001.

भारत रेलिंग
अनुसंधान सचिव
१/१

Sub: Final maximum permissible speed certificate of high hp dual fuel DEMU fitted with CNG cylinders and conversion kit upto maximum speed of 100 km/h.

High horse power diesel electric multiple unit has exhibited satisfactory riding during detailed oscillation trials conducted on Chennai-Bangalore section of Southern and South Western Railways up to a maximum speed of 110 km/h, the results of which are contained in RDSO's Report no. MT-250 of September 2000. Based on these results, the high horse power DEMU has been permitted to operate on main line standard track upto maximum speed of 80/100 km/h, vide this office final speed certificate no. MC/RLC/D dated 18-10-2000 followed by amendment of even no dated 07-01-2002 permitting speed of 100 km/h. Each unit consists of one driving car (DPC), two trailer cars (TC) and one driving trailer coach (DTC) which have been manufactured as per ICF drawing nos. DMU/DPC 5-9-0-501 latest alteration, DMU/TC 4-9-0-401 latest alteration and DMU/DTC 4-9-0-401 latest alteration respectively. The HP-DMU can be run in multiples of 1, 2 or more units as per traffic demands. Existing 1400 HP DEMU are provided with diesel engine of type KTA-50-L of Cummins make vide letter No. 2004/Dev/Cell/TML/2, dated 08.10.2004.

1.1 Modification of existing engine into dual fuel engine will involve provision of a cascade consisting of CNG cylinders and conversion kit as per sketch no. CG - K5021 consisting of controlling valves and gas conditioning equipment. Increase in weight due to provision of cascade is compensated by reduction in passenger capacity and also reduction in fuel tank capacity. Modification work has already been carried out on one DPC for provision of CNG kit and storage system. Chief Commissioner of Railway Safety vide letter no. Q-17015/1/2004-RS dated 10-02-2005 has accorded sanction for dispensation of oscillation trials for high hp dual fuel DEMU fitted with CNG cylinders, subject to getting clearance from the competent authority regarding mounting of onboard CNG cylinders in engine / compartments.

2. Based on this sanction and the design features of high hp dual fuel DEMU fitted with CNG cylinders and conversion kit, it is certified that dual fuel DEMU can be permitted to operate up to a speed of 100 km/h, subject to the following conditions:

2.1 Track

- 2.1.1 The track shall be to a minimum standard of 90R rails on sleepers to M+4 density and depth of ballast cushion below sleepers of 200 mm, which may consist of at least 75 mm clean and the rest in caked up condition, on compacted and stable formation.
- 2.1.2 For track of lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed. 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 existing provisions of the Indian Railways Permanent Way Manual - 1986.

2.2 Bridges

- 2.2.1 The clearance refers to bridges with standard design of girders, slabs, pipe culverts, pier and abutments etc. issued by RDSO for BGML, RBG and MBG-1987 standard loadings
- 2.2.2 All other designs of superstructure and sub-structures are to be examined under the direction of the Principal Chief 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-Structure and Foundation Code etc. read with up to date correction slips.
- 2.2.3 This clearance is subject to the following parameters of the rolling stock:
- | | | |
|------|----------------------------|-----------------------------|
| i) | Maximum axle load | 19.2t (DPC), 13.3t (TC/DTC) |
| ii) | Maximum tractive effort | 15.2t |
| iii) | Maximum braking force | 5.1t (DPC), 3.87t (TC/DTC) |
| iv) | CG height above rail level | not to exceed 1830 mm |

2.3 Signalling

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

2.4 Rolling Stock

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

2.4.2 The stipulations regarding use of CNG laid down vide Chief Controller of Explosives, Nagpur letter no. GC(NC)F-381/DL dated 13-12-2004 shall be strictly followed.

2.4.3 Railway shall obtain permission from Chief Controller of Explosives, Nagpur to mount the CNG cylinders in the engine compartment of the DEMU.

2.5 General


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

2.5.2 The profile of high hp dual fuel DEMU fitted with CNG cylinders and conversion kit is same as existing BG mainline coaches and are within the EDO-590 profile, approved by Railway Board for coaching stock vide their letter no. 63/WDO/SD/2 dated 20-03-65.

Encl: 1) CG-K5021

2) CRS letter No.Q-17015/1/2004 Sr.Exe. Director Standards (Motive Power)
-Rs dated 10-02-2005.

3) Chief Controller of Explosives GC(NC)
F-381/DL dated 13-12-2004.


(S. K. Sinha)


Copy to:

The General Manager (Mech.), N. Railway, Baroda House, New Delhi-110 001.

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