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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
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DID (0522) 2465310

No. SV.AS.ML

Dated 18.09.2015

महाप्रबन्धक (इंजीनियरिंग)

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई– 400 001.
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता – 700 001.
3. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली – 110 001.
4. दक्षिण रेलवे, पार्क टाउन, चेन्नई – 600 003.
5. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद – 500 071.
6. दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता – 700 043.
7. पूर्वोत्तर रेलवे, गोरखपुर – 273 001.
8. पूर्वोत्तर सीमान्त रेलवे, मालीगॉव, गुवाहाटी – 781 011.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई – 400 020.
10. पूर्व मध्य रेलवे, हाजीपुर – 844 101.
11. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्पलेक्स, भुवनेश्वर, उड़ीसा – 751 017.
12. उत्तर मध्य रेलवे, हास्टिंग रोड ,इलाहाबाद – 211 001.
13. उत्तर पश्चिम रेलवे, जयपुर – 302 006.
14. दक्षिण पश्चिम रेलवे, हुबली – 580 023.
15. पश्चिम मध्य रेलवे, जबलपुर – 482 001.
16. दक्षिण पूर्व मध्य रेलवे, आर ई आफिस काम्पलेक्स, बिलासपुर – 495 004.

Sub: Final speed Certificate for operation of LHB Non-AC EOG GS (LS5) variant coach on FIAT bogie fitted with pneumatic suspension at secondary stage upto maximum speed of 105 kmph, with max. pay loads upto 24.34t, on track maintained to other than C&M-I Vol.-I standard.

1. Railway Board vide letter no. 2007/M(C)/137/7 Vol. I dated 18.09.2013, advised to RDSO for conduct oscillation trials on LHB Non AC EOG GS variant (LS5) on Fiat bogie fitted with pneumatic suspension at secondary stage. RCF has manufacture one prototype LHB Non-AC EOG GS Variant (LS5) fitted with 140 kN air springs. Coach is designed as per RDSO Layout drawing no. CG-14045 and bogie general arrangement as per RCF drawing no.LW00011. The transportation code of this type coach is LS5.

   The Salient features of this coach are as under:-

   (i) Coach is designed as per RDSO Layout drawing no. CG-14045 and bogie general arrangement as per RCF drawing no.LW00011. The Transportation code of this coach type is LS5
   (ii) The profile of this coach is similar to existing EOG LHB GS coach.
   (iii) Coach has been built with state of the art technology and provided with Disc Brakes and Transition Coupling.
   (iv) Length of the coach over body is 23540mm & that over couplers is 24000mm.
   (v) Overall height of coach from rail level is 4039mm.
   (vii) Wheel base is 2560 mm & axle load is 16.25t.
   (viii) Complete details of axle load, wheel spacing, length of couplers, minimum height from rail level, other principal dimensions, bogie, wheels, brake, electrical system, coupler, earthing device etc. are provided in "Maintenance Manual for LHB Coach" issued by CAMTECH Gwalior in year 2013.

O/C

(ix) Passenger Emergency Alarm Signal Device (PEASD) is provided for emergency communication between passengers & train Driver.

(x) In this type of coach, no under-slung water tanks required. Only four nos. 390 Ltrs. water tanks are provided above each lavatory.

(xi) In this coach four bio digesters are provided.

1.1 Detailed oscillation trials of LHB Non-AC EOG GS (LS5) variant on FIAT bogie fitted with pneumatic suspension at secondary stage have been conducted over Daund – Solapur (DD-SUR) section of Central Railway with max. pay loads upto 24.34 t, on track maintained to other than C&M-I Vol.-I standard. The test results as contained in RDSO's Report no. RDSO/2015/TG/MT-. 1414 F Rev.-0 Dt. 11.08.2015 Amendment – NIL, indicates satisfactory riding and stability characteristics in empty & loaded condition (with & without yaw damper and inflated air spring) on straight track & station yard upto the speed of 115 kmph and on 1.87° and 1.20° curves.

1.2 Based on the above trial results, it is certified that LHB Non-AC EOG GS (LS5) variant on FIAT bogie fitted with pneumatic suspension at secondary stage is fit for operation upto maximum speed of 105 kmph with pay loads upto 24.34 t maximum on track maintained to other than C&M-I Vol.-I standard as RDSO report no. MT-1414F Rev.- 0 dated 10.08.2015.

2.1 Track

2.1.1 The track shall be to a minimum standard of 52 kg rails on PSC sleepers with M+7 densities and minimum 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 compact 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 existing provisions of the Indian Railways Permanent Way Manual, Second Reprint 2004.

2.1.4 The welds shall be protected by Joggled fish plates as per provisions of para 6.4 and para 8.14 of USFD Manual and para 6.3 of AT welding manual and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per para 250 and 251 of IRPWM. In addition, wherever condition warrants on account of corrosion on rail / weld collar, wear on rail, cupping of welds etc., necessary precautions shall be taken for fish plating / joggled fish plating.

2.1.5 Zonal Railway may ensure further detailed examination of track as deemed fit based on age cum condition basis, overdue renewal and condition of formation etc. as per provisions of Chapter-III of IRPWM-2004 regarding permanent way renewals.

2.2 Bridges

2.2.1 The clearance refers to bridges "Standard Spans" 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 76.2 m (clear) 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 "Special Spans" (designed and constructed by Zonal Railways based on site requirements) including Arches and sub-structures of all bridges(all Standard & Special Spans) are to be examined under the directions of Chief Bridge

Engineer concerned and certified safe with respect to current Indian Railway standard codes with up to-date correction slips.

2.2.3 The clearance for LS5 coach is subject to the following parameters:-

S.N.	Parameters	LHB Non-AC EOG GS (LS5)
1.	Maximum axle load	16.25 t
2.	Max. braking effort	6.62 t
3.	Max. CG height from rail level	Not exceeding 1830mm

2.2.4 Specific restrictions shall be applicable which are indicated in relevant speed certificates of hauling locomotives, issued by RDSO.

2.2.5 The above clause have been arrived considering bridges are in physically sound condition. In case the bridges are not in satisfactory physical condition, necessary speed restriction to be impose by concern Chief Bridge Engineer of Zonal Railway.

2.2.6 Location of bridges on which speed restrictions are imposed shall be notified by the Railways and incorporated in the working timetable.

2.3 Signaling

2.3.1 Provisions 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.

2.3.3 The condonation regarding infringements in schedule of dimension shall be obtained in accordance with local conditions, before movement.

2.4 Traction Installation:

2.4.1 The 25 KV AC OHE shall have swiveling type Cantilever Assembly having tension in the conductors, regulated, automatically with a presag. The presag of 50/100 mm is on the Contact Wire for a maximum span of 72m, proportionately less for smaller spans.

2.4.2 In case of locations where 25 KV AC Porcelain Section Insulators are installed on main line and lies within first $1/10^{th}$ and $1/3^{rd}$ of the span, immediately after the OHE Structure and the Runners are in trailing direction, the maximum speed shall be 120 kmph. At all other locations where 25 KV AC Porcelain Section Insulators are installed, the speed shall be limited to 80 kmph.

2.4.3 It is recommended that the Cantilevers in the section should have BFB Steady Arm (RI No.2390) with 25mm Drop Bracket Assembly (RI No.2360) instead of Tubular Steady Arm (RI No.2520). Bent Steady Arm at overlap locations shall continue.

2.4.4 The current collection shall be made through one number pantograph fit for high speed operation.

2.4.5 In 25KV AC traction area, the CEE of the 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 Dimension of 1676 mm gauge (BG) revised 2004" with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.

2.4.6 In addition to above, the Chief Electrical Engineer of concerned Railway may impose any temporary speed restriction on the basis of personnel knowledge, experience of the sectional OHE and the field conditions prevailing on the particular section.

2.5 Rolling stock:

2.5.1 Before initiating the operation, Engineering department of the Zonal Railway shall arrange to certify the track worthiness and Mechanical and Electrical department of the Zonal Railway shall certify the safety of the Rolling stocks. They shall also ensure proper maintenance of the Rolling stocks as per maintenance manual.

2.5.2 The Wheel Side Protection (WSP) device of all the coaches in the rake shall be functional at the starting station. If the WSP of any coach becomes defective enroute, the brake system of that particular coach shall be isolated.

2.5.3 The LHB design Non-AC EOG Coaches shall be maintained as per "Maintenance manual for Non-AC LHB design Coaches".

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, signalling and interlocking etc. shall be observed..

2.6.2 This coach infringes IR schedule of dimensions (BG) Revised-2004, in respect of clause no. 19 (b) and 20 (b) of Chapter IV (A). Same infringements have already been condoned by Railway Board vide letter no. 2011/CEDO/SR/08, dated 28.03.2011 for Non- AC Chair Car (EOG) LHB variant coach.

2.6.3 Zonal Railways shall ensure that the load in this coach should not exceed more than its designed pay load i.e. 24.34t maximum.

संलग्नक:

1. RDSO Layout drawing no.CG-14045
2. RCF Bogie General Arrangement drg. no.LW00011
3. Railway Board's letter no.2007/M(C)/137/7 Vol.I dated 18.09.2013

18/9/15
(संजय कुमार)
कार्यकारी निदेशक मानक चालन शक्ति

प्रतिलिपि:-

1. मुख्य रेल संरक्षा आयुक्त, मण्डल रेल प्रबन्धक कार्या0 परिसर, पूर्वोत्तर रेलवे, अशोक मार्ग, लखनऊ - 226001
2. महाप्रबन्धक (यांत्रिक / संचालन / संकेत – दूरसंचार / विद्युत)
   i. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई – 400 001.
   ii. पूर्व रेलवे, फेयरली प्लेस, कोलकाता – 700 001.
   iii. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली – 110 001.
   iv. दक्षिण रेलवे, पार्क टाउन, चेन्नई – 600 003.
   v. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद – 500 071.
   vi. दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता – 700 043.

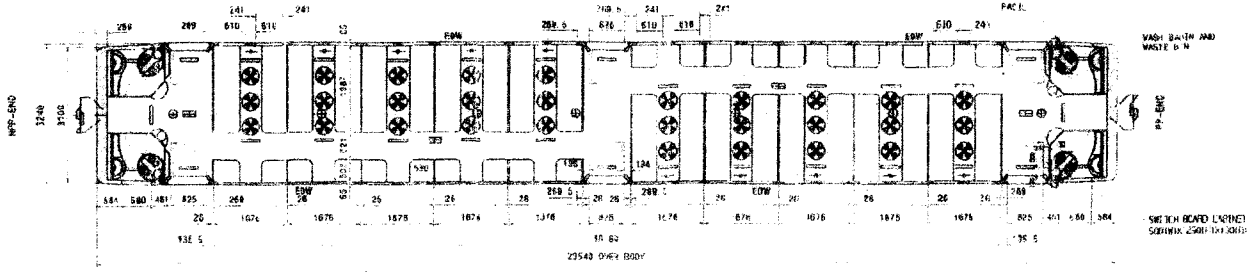
vii. पूर्वोत्तर रेलवे, गोरखपुर – 273 001.
viii. पूर्वोत्तर सीमान्त रेलवे, मालीगॉव, गुवाहाटी – 781 011.
ix. पश्चिम रेलवे, चर्चगेट, मुम्बई – 400 020.
x. पूर्व मध्य रेलवे, हाजीपुर – 844 101.
xi. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्पलेक्स, भुवनेश्वर, उड़ीसा – 751 017.
xii. उत्तर मध्य रेलवे, हास्टिंग रोड ,इलाहाबाद – 211 001.
xiii. उत्तर पश्चिम रेलवे, जयपुर – 302 006.
xiv. दक्षिण पश्चिम रेलवे, हुबली – 580 023.
xv. पश्चिम मध्य रेलवे, जबलपुर – 482 001.
xvi. दक्षिण पूर्व मध्य रेलवे, आर ई आफिस काम्पलेक्स, बिलासपुर – 495 004.

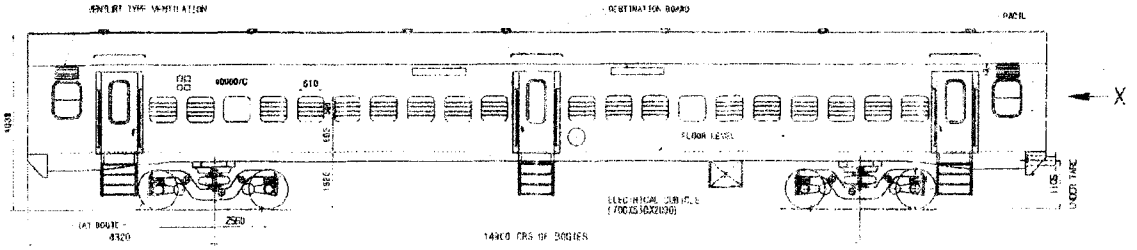
3. प्रबन्ध निदेशक, कोंकण रेलवे कार्पोरेशन, बेलापुर भवन, नवी मुम्बई–400 014

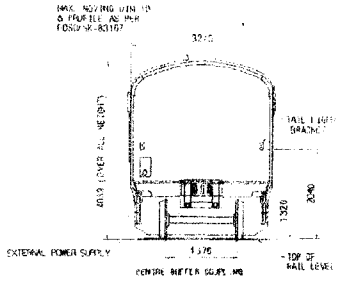
संलग्नक:

I. RDSO Layout drawing no.CG-14045
II. RCF Bogie General Arrangement Dg. no.LW00011
III. Railway Board's letter no.2007/M(C)/137/7 Vol.I dated 18.09.2013

18/9/15
(संजय कुमार)
कार्यकारी निदेशक मानक चालन शक्ति





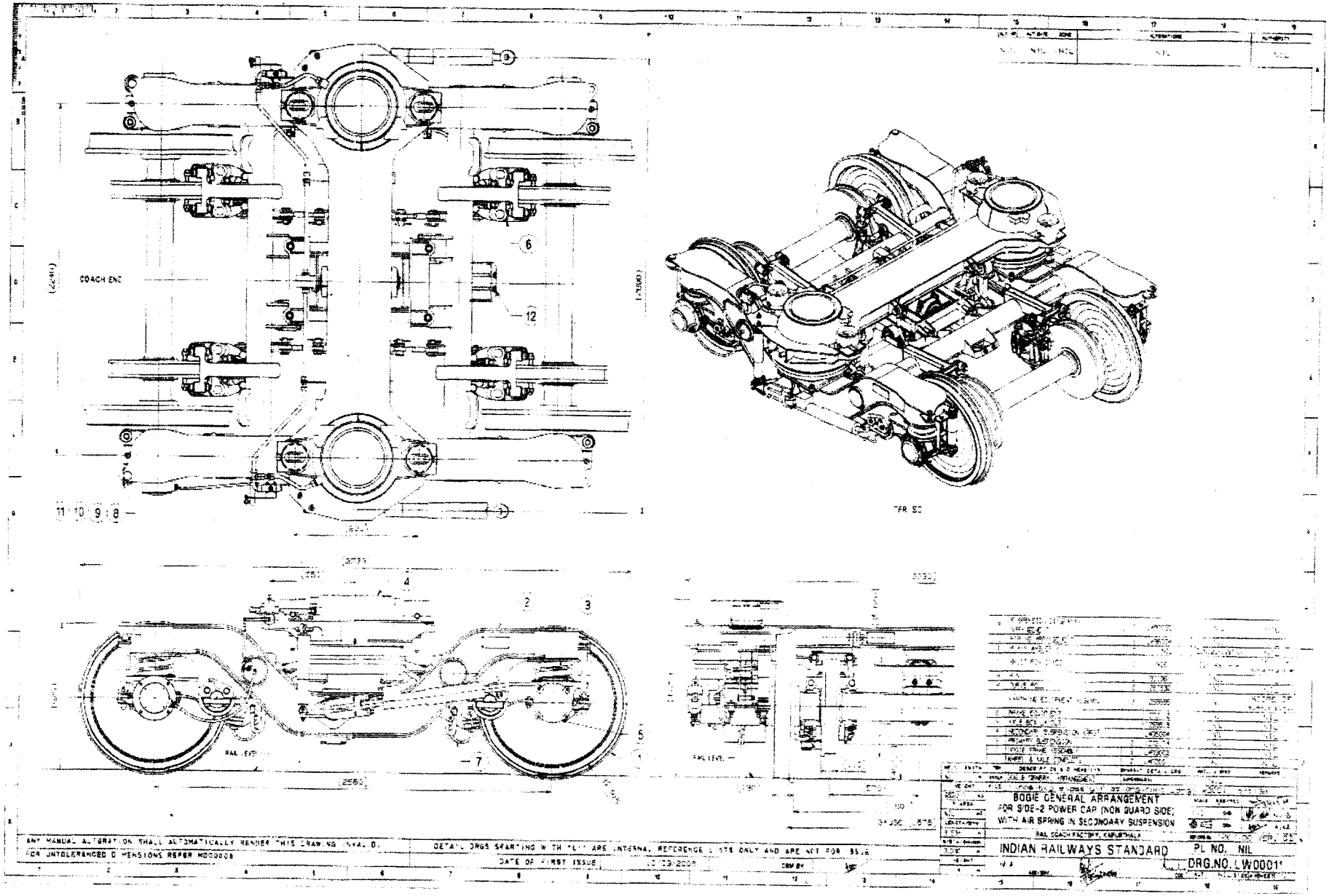


VIEW FROM 'X'

--- RAILWAY CREST
--- RAILWAY
--- COACH NUMBER
--- VENTILATION
--- FAN FIXED TYPE (400MM SWEEP)
--- FLOURESCENT LIGHT
--- DISASTER EMERGENCY LIGHT (LONG TYPE)
--- ALARM PULL
--- PACIL
EOW --- EMERGENCY OPERABLE WINDOW

NOTES:-
1 NO. OF PASSENGERS TO SEAT - 70
2 NO. OF DOOR ABOVE - 02
3 NO. OF LAVATORIES - 04
4 NO. OF EMERGENCY OPERABLE WINDOWS - 04

				INDIAN RAILWAY STANDARDS
				ICF COACH WITH FIAT BOGIES
LD50012		1:50		PROPOSED LAYOUT OF 2nd CLASS NON-AC EOG CRASHWORTHY COACH (WITH 140KN SECONDARY AIR SPRING)
		B.G.	R.D.S.O. (CG)	CG-14045


COACH END
6
12
11 10 9 8
7
4
2
3
5
BOGIE GENERAL ARRANGEMENT
FOR SIDE-2 POWER CAR (NON GUARD SIDE)
WITH AIR SPRING IN SECONDARY SUSPENSION
INDIAN RAILWAYS STANDARD
PL NO. NIL
DRG.NO. LW0001

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

No 2007/M(C)/137/7 Vol (i) New Delhi dated 18.09.2013

The Executive Director (Carriage),
RDSO / Lucknow.

Sub: Secondary suspension in LS Coach fitted with FIAT type bogie.

Ref: RDSO letter No SV.FIAT dated 04/6.06.2013

Ref. above, proposal of RDSO has been examined in the Board. Board (MM) has approved for oscillation trial of LS coach (where conditions of maximum overload had encountered) with Air spring in secondary suspension. RCF/KXH to manufacture one coach with 140 KN Air spring as proposed by RDSO for conducting oscillation trials.

Before further proliferation of Air springs RDSO is advised following:

i. Development of higher capacity Air spring should be expedited to sustain worst condition of overload being reported by railways and to build adequate margin of safety.

ii. To avoid compulsion of deputing on board TXRs on trains fitted with Air spring suspension in main line coaches, design of Failure Indication and Brake Application (FIBA) device is being developed by RDSO and trials underway. Design of FIBA should be standardized quickly for its regular adoption on coaches fitted with Air springs in secondary suspension. There should not be any need for deputing on board TXR after fitment of FIBA on coaches.

iii. In the 13th CMG various issues raised by railways in regard to Air Spring suspension were discussed which need to be addressed. From the operation point of view, condition of 60 KMPH speed restriction and 1000 Km distance restriction is undesirable. RDSO should endeavor to do away with these restrictions of speed and distance in case of deflating of air spring. Design of emergency spring should be reviewed for this purpose. It also needs to be noted that there are cases of Air spring failures which are not necessarily on account of bursting of bellows but may deflate it.

iv. Design of Air spring suspension piping arrangements and other components and their arrangement in the coaches should be sturdy and

these should be well protected from damage on account of external factors (e.g. Ballast hitting, cattle run over etc) as far as possible. These should be suitably shielded and at the same time facilitate requisite inspection and maintenance. Further, location of leveling valve should also be reviewed and shielded against external hitting from ballast etc.

ii. CR had reported problem of MR pressure dropping on run on hybrid rakes fitted with Air Springs and requested for fixing minimum capacity in CFM for locos hauling such loads. This issue should be appropriately addressed.

iii. CR has also reported issues in the design and location of various components of Air Spring system which also needs to be addressed. One of the most critical problems being attention to leakages in the pipelines which run inside the bolster.

iv. Maintenance instructions for Air springs should be prepared and list of spare parts which needs to be kept by the PM/Secondary examination maintenance points should also be finalized in consultation with railways

v. LS coaches have a tare weight of approx 38 T. With longer length of LHB coaches making it vulnerable to overloading beyond 300 passengers, addition of bio-toilets of approx. 2.2 tonnes and with incremental load of Air spring with FIBA, RDSO should also ensure that prescribed design limits are not exceeded.

Board may be kept apprised of the progress of the action taken in the matter.

18/09/13

(Prashant Kumar)
Dir. Mech. Engg. (Chg.)
Railway Board

Copy to:

CME, RCF
CME, ICF

For Information & necessary action

भारत सरकार Government Of India
रेल मंत्रालय Ministry Of Railways
(रेलवे बोर्ड) (Railway Board)

No. 2011/CEDO/SR/08 New Delhi, dated 28.03.2011

The Director General,
RDSO, Manak Nagar,
Lucknow-226011.

Sub : Condonation of infringement to maximum dimensions for newly manufactured Non-AC Chair Car (EOG) LHB Variant Coach.

Ref : Your office letter no. CT/DHS/3/Coaches, dated 11.3.2011.

.....

With reference to your application referred above, sent through the CCRS, Lucknow, sanction of Ministry of Railways, Railway Board is hereby communicated for condonation to only newly manufactured coach, i.e. the Non-AC Chair Car (EOG) LHB Variant Coach fitted with Centre buffer couplers & fiat bogies with 16.25t axle load capacity.

The design of this Non-AC Chair Car (EOG) LHB Variant Coach infringes Clause nos. 19(b) and 20(b) of Chapter-IV(A) of IR B G Schedule of Dimensions, Revised, 2004 as per Annexure-I, drawings & other details accompanying with your above referred letter.

28.3.11
(आलोक कुमार)
कार्यकारी निदेशक/सिविल इंजीनियरिंग/रे.बो./रेलवे बोर्ड

No. 2011/CEDO/SR/08 New Delhi, dated 28.03.2011

Copy forwarded for information to :

1. The Chief Commissioner of Railway Safety, compound of DRM/NER, Ashok Marg, Lucknow - 226001 w.r.t. his endorsement no. वसु. 17012/01/2011 - वि., dated 15.3.2011.

28.3.11
(आलोक कुमार)
कृते सचिव, रेलवे बोर्ड

Copy to :

(i) General Manager, All Indian Railways.
(ii) Commissioner of Railway Safety, All circles.