

संजीव स्वरूप  
प्रधान कार्यकारी निदेशक मानक विद्युत

**Sanjiv Swarup**

Principal Executive Director Stds. Electrical



सत्यमेव जयते

भारत सरकार – रेल मंत्रालय  
**अनुसंधान अभिकल्प और मानक संगठन**

मानक नगर, लखनऊ – 226011

Government of India - Ministry of Railways  
**Research, Designs & Standards Organization,**

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D.O.No.EL.8.5.10.1

Dt: 02.09.2020

Dear Sri Tiwariji,

**Sub: PCDO for the month of August, 2020.**

**1.0 HIGHLIGHTS**

- 1.1 Efficiency test, temperature rise test and slip slide test of WAG12B locomotive has been carried out in the section of ECR from 13.07.2020 to 27.07.2020.

**2.0 RELIABILITY IMPROVEMENT**

- 2.1 RDSO vide letter No.EL/3.2.19/3-Phase dtd. 15.07.20 has issued the letter to judge the performance of Indfos/Danfoss make pressure switches in the 3-phase electric locomotive. As per SCR discussion during MSG it was advised that some more sheds; ELS/AQ, TATA, GMO, BRC, RPM, TKD, GZB, BIA, VSKP & HWH may also provide Indfos/Danfoss make pressure switches in 2 to 5 Locos and monitor the performance for a reasonable period. Further, these sheds shall also give the performance of Eaton/Square D make pressure switches provided in 3-phase locos under their control. If its performance reported is found satisfactory then further action will be taken.
- 2.2 M/s Medha, M/s ABB and M/s BTIPL has been advised to improve the reliability of 3-phase IGBT based loco propulsion equipments related with punctuality loss failures due to software issue vide letter No.EL/11.5.5/21 dated 06.08.2020.
- 2.3 M/s BHEL Siemens has been advised to improve the reliability of 3-phase IGBT based loco propulsion equipments related with punctuality loss failures due to software issue vide letter No.EL/11.5.5/21 dated 05.08.2020.
- 2.4 Comments on reply of M/s MELPL for operational issues related to WAG12B locomotive has been communicated to M/s MELPL vide letter No.EL/3.1.35/24 dated 31.07.2020.
- 2.5 M/s BG Industries has been advised to improve the reliability of temperature sensor of 3-phase locomotive and submit the failure investigation report vide letter No.EL/3.1.35/02 (Elect.) dated 13.08.2020.
- 2.6 ECoR was requested to submit the details of the locos in which stalling cases was observed due to improper operation of slip-slide control vide letter No.EL/3.1.35/17 dated 11.08.2020.



### 3.0 DEVELOPMENTAL ACTIVITIES

#### 3.1 Development of End of Train Telemetry(EoTT)

- i) South Eastern Railway vide their letter No.TRS/BNDM/T/905/EoTT/Spl. dated 31.07.2020 had forwarded the proposed location of HoT(Master & Slave) inside Cab1 & Cab2, Electrical interface connection & Pneumatic interface of M/s Signotron in WAG9 locomotive for further examination, standardization and approval. The documents had been examined and observations has been informed to South Eastern Railway vide letter No.EL/4.2.15/EoTT/Signotron dated 06.08.2020.
- ii) East Coast Railway vide their letter No.ELS/ANGL/T-103/20/3887 dated 29.07.2020 had forwarded the document No. OBE-00-17-06-IN, Version:A for fixing arrangement of EoT&HoT of M/s Siemens. The documents had been examined and observations has been informed to M/s Siemens & East Coast Railway vide letter No.EL/4.2.15/EoTT/Siemens dated 26.08.2020.

#### 3.2 Development of Re-generative braking in WAG7 locomotive

- i) Signal Directorate vide Note No. EL/3.2.19/RB/Medha dated 26.08.2020 has been requested to expedite the examination of the test results and give clearance/comments for EMI/EMC testing for Loco No. 24581/WAG7 equipped with Regenerative braking System, so that further action may be taken for above project.
- 3.3 RDSO vide letter No.EL/3.2.15/3-phase (AIML) toM/s Anest Iwata Motherson Pvt. Limited, has been requested the firm to expedite the fitment of oil lubricated compressor model "RR1750" in DLW and same has been installed at DLW in electric locomotive WAG-9 No.41065 in end of July.
- 3.4 After successfully fitment of supplied by M/s Hind Rectifier/ Mumbai on locomotive No.22307 WAP-4 the commissioning and testing of 2 x 130 KVA SIV has been carried out at ELS/BSL. After successful field trial the unit has been offered to traffic on 12.08.2020. Vide this office letter No.EL/1.2.9.1./Hind dated 20.08.2020 concerned railway has been asked to send the performance report.
- 3.5 Current collection test on WAG12B locomotive (60021) conducted in DEE-RE-DEE section of NR on 15/16.08.2020 and in Delhi-Ajmer-Delhi section on of NR & NWR on 08/09.08.2020. M/s MELPL has been advised to study and investigate to prevent high spark observed in current collection test on WAG12B locomotive vide letter No.EL/3.1.35/24 dated 20.08.2020.
- 3.6 Following firms have been placed in RDSO vendor list as developmental source with limited quantity of order:

1	Oil lubricated Compressor 1745 LPM Capacity of Model RR1750	M/s Anest Iwata Motherson Pvt. Limited
2	Oil lubricated Compressor 1745 LPM Capacity of Model SDC 1745 US	M/s Saber Dias Compression Ltd.
3	Oil lubricated Compressor 1745 LPM Capacity of Model RR 20100CC	M/s ELGI Equipments Ltd.,
4	Computer/ Microprocessor Controlled air brake System	M/s Knorr Bremse India Pvt. Ltd



5	Computer/ Microprocessor Controlled air brake System	M/s Escorts Ltd
6	Computer/ Microprocessor Controlled air brake System	M/s Hind Rectifier Ltd
7	Computer/ Microprocessor Controlled air brake System	M/s Faiveley Transport Rail Technologies India Ltd
8	2 X 130 KVA SIV	M/s Hind Rectifier Ltd
9	2 X 130 KVA SIV	M/s Siemens Ltd
10	2 X 130 KVA SIV	M/s ABB India Pvt Ltd.
11	2 X 130 KVA SIV	M/s Medha Servo Drive Pvt Ltd
12	High Reach Pantograph	M/s Faiveley Transport Rail Technologies India Ltd
13	High Reach Pantograph	M/s River Engineering Pvt Ltd
14	High Reach Pantograph	M/s Air Control and Chemical Engineering Company Limited
15	High Reach Pantograph	M/s Daulat Ram Engineering services Pvt Ltd
16	High Reach Pantograph	M/s Schunk Metal & Carbon India Pvt. Ltd
17	High Reach Pantograph	M/s Contransys Pvt Ltd
18	Metalised Carbon strip	M/s Mersen India Private Limited
19	Spheribloc for three phase electric locomotive	M/s Avadh Rail Infra Limited, Lucknow
20	Elastic Ring for three phase electric locomotive	M/s Electroplast, Ghaziabad
21	LED based twin beam head light	M/s Ensav Devices Pvt Ltd, Mumbai
22	LED based twin beam head	M/s Matsushi Power Technologies, New Delhi
23	LED based twin beam head	M/s Power Technologies Corporation, New Delhi
24	Development of Functionality Equivalent PCB Cards of GTO Based Converters and MICAS VCU in Three Phase Locomotives	M/s Advanced Rail Control Pvt. Ltd, Bangalore.
25	3 -Phase Locomotive traction Motor Bearing for TM type 6FRA6068	M/s National Engineering Industries Ltd, Jaipur
26	3 -Phase Locomotive traction Motor Bearing for TM type 6FRA6068	M/s Schaeffler India Limited, Maneja
27	3- Phase Locomotive traction Motor Bearing type NU2236(DE side only) for TM type 6FRA6068	M/s SKF Technologies (India) Pvt. Limited, Ahmedabad

- 3.7 M/s Schaeffler India Limited, Vadodara has been upgraded from 'Developmental Vendor' to 'Approved Vendor' category for manufacturing & supply of 'Suspension Tube Bearings' for WAG9/WAP7 Locomotives, vide this letter No.EL/1.3.10/FAG dated 07.08.2020.
- 3.8 Video Conference (VC) Meeting on TCAS was carried out on 24.08.2020 by RDSO with Zonal Railways & OEMs of TCAS to address the various issues of TCAS raised by Zonal Railways.



- 3.9 Video Conference (VC) Meeting on TPWS was carried out on 25.08.2020 by RDSO with DFFCIL, Zonal Railways and OEMs of TPWS & brake system to discuss the progress of TPWS in WAG9H locomotives.
- 3.10 Design document of power cable used in M/s Medha make 25kV AC Microprocessor controlled IGBT based three phase propulsion equipment for under slung EMUs project has been scrutinized and status for same has been conveyed to PS & EMU dte. vide letter No.EL/8.1.25.1/Medha/Under slung MEMU dated 06.08.2020.
- 3.11 M/s CGPIL make 22HP motor has been cleared for use in M/s ELGI make main compressor model RR21100 CC (Oil Lubricated) vide letter No.EL/3.2.176/3,dated 10.08.2020.
- 3.12 RDSO official associated in the trials (Signal Interference Test & one lead + 04 remote loco operation) through Video Conference for DPWCS of M/s LWT make at ELS/TATA/ECR on 27.08.2020 & 28.08.2020.Trial report is awaited from CLW.
- 3.13 Design on proposal for provision of TE/BE limitation switch on driver desk has been reviewed and the comments communicated with M/s MELPL vide letter No.EL/3.1.35/24 dated 17.08.2020.
- 3.14 M/s ITALCERTIFER, Italy and IIT/Kanpur have been requested to submit the estimate in Indian Rupees for carrying out third party audit and certification of software/hardware of Push-Pull operation of WAP5 locomotives vide letter No.EL/3.1.35/4 dated 25.08.2020.
- 3.15 QAP for M/s Think Circuit Railtech Pvt. Limited, Bangalore seeking registration for development of PCBs functionally equivalent to MICAS S2 electronics has been provisionally approved vide note No.EL/11.5.5/14/TCRPL dated 24.08.2020.
- 3.16 Comments on design document for development of Tr. Converter by M/s BHEL for AC MEMU as per ICF P.O. No.08/18/1848/2617/F dated 22.11.2018 has been given vide note No.EL/11.5.5/1/MEMU/ICF/BHEL dated 03.08.2020.
- 3.17 Efficiency test, temperature rise test and slip slide test of WAG12B locomotive has been carried out in the section of ECR from 13.07.2020 to 27.07.2020.

#### **4.0 SPECIFICATION/STR**

- 4.1 CLW vide its letter No.CLW/TM/9160 dated 01.06.2020 had requested RDSO to include M/s Wieland/Austria name in RDSO specification No.RDSO/SPEC/EL/0062 (Rev 2) and had offered that M/s Buntmetall /Austria has been taken over by M/s Wieland. In this regard, draft specification No.RDSO/SPEC/EL/0062 (Rev 3) was prepared, uploaded on RDSO website and was circulated to PUs/Railways and firms for comments. Comments received from PUs/Railways and firms have been forwarded to CLW for its opinion vide letter No. EL/3.2.182 dated 18.08.2020.
- 4.2 Draft STR No.RDSO/2007/EL/STR/0018 (Rev.'2') for Schedule of Technical Requirements for Manufacture, Supply of MSU Tubes and Components of Conventional



& Three Phase Electric Loco traction motors has been uploaded on RDSO website on 07.08.2020 for comments from Zonal Railways / PUs and Firms for one month period.

4.3 Draft Technical Circular for procedure of manual selections of Cab in Electric Locomotives fitted with DPWCS in train consists has been re-circulated to Railways/PUs/OEMs for their suggestions/comments vide RDSO letter no. EL/3.1.3(DPWCS), dated 20.08.2020.

4.4 Draft Modification Sheet for "Modification in MRB circuit working in cooling mode in IGBT based WAP5, WAP7 and WAG9/9H class of locomotive" has been issued vide letter no. EL/3.1.35/17 dated 19.08.2020.

## **5.0 PROTOTYPE TESTING/QUALITY AUDIT**

Nil

## **6.0 OTHER ITEMS**

6.1 Compliance for ICF Annexure No. ICF/MEMU/0096-02(Rev.0) for traction motor type IM3302AZ against ICF P.O. No.08/18/1848/2617/F dated 22.11.2018 (MEMU 104 sets) has been submitted by M/s BHEL through PS & EMU Directorate Note No.EL/1.3.16.7/3-φ MEMU/RCF/BHEL dtd.16.03.2020. The submitted compliance of traction motor type IM3302AZ in reference with contract Spec. No.RDSO/PE/SPEC/EMU/0096-2008 (Rev.4) Dec-2009 & ICF Annexure No.ICF/MEMU/0096-02 (Rev.0) have been examined and comments have been given vide Electrical Directorate's Note No.EL/3.2.182/OTM/163/BHEL dated 14.08.2020.

6.2 CLW vide letters No.CLW/TM/9164 dated 06.08.2020 & 22.08.2020 had forwarded the test reports for use of alternate Kapton Polyimide film 150FCRC019 of M/s DuPont/USA in place of existing film 150FCR019. Course of action to be taken by CLW to use of proposed alternate kapton Polyimide film of M/s DuPont has been communicated to CLW vide RDSO's letters No.EL/2.2.8 dated 11.08.2020 & 26.08.2020.

6.3 Updated Type Test report (Doc. No. TEC-KME-TTRE-S001-03), Traction motor bearing life calculation document no. TEC-KME-TTRE-S001-03 Attachment 6 and Revised Motorette test protocol Document No. TEC-KME-RDMT-S001-07\_ Attachment 4 of traction motor type YQ-190-28 for Kolkata Metro project manufactured by M/s Zhuzhou CRRC, China has been received through PS & EMU Directorate note No.EL/MRS/3-phase/Zhuzhou CRRC-TEC dated 28.05.2020 & M/s Zhuzhou CRRC letter No.TEC-KME-PM-L374-03 dated 17.06.2020 received through email. Submitted documents have been examined and shortcomings in Type Test Report & design documents have been communicated vide note No.EL/3.2.182/K.Metro/Zhuzhou dated 20.08.2020.

6.4 Simulation studies have been done for calculating the time for WAP5 & WAP7 at different speeds with different loads to compare with the timings of EMU/MEMU at different locations as required from PS & EMU Dte.

6.5 Simulation studies have been done for calculating the acceleration/Energy/inter-sectional running time for different locomotive with different speeds/loads/sections as advised by Railway Board from time to time.




- 6.6 Simulation studies have been done for acceleration calculation on data provided by DFCCIL for TPWS & communicated vide RDSO letter no. EL/0.1.3/2,dtd 04.08.2020.
- 6.7 Queries of firms related to tender no. 08/19/2598 regarding procurement of Electrics for manufacture of Train-18 Train sets have been examined and comments on same have been provided to PS & EMU dte. vide letter no. EL/8.1.25.1,dtd 26.08.2020.
- 6.8 IIT/Kharagpur has been asked to submit project status report and details of expenditure done of the project "Aerodynamic Design of Traction Rolling Stock with speed potential of 250 km/h (upgradable to 350 km/h)" vide letter no. EL/8.5.17/2/A1 dated 25.08.2020.

Encl: Annexure I, II & III


Warm Regards'

Yours sincerely,

  
21/9/2020  
(Sanjiv Swarup)

**Shri Rajesh Tiwari,  
Member Traction,  
Railway Board, Rail Bhavan,  
New Delhi - 110 001**

Copy for kind information to-  
Additional Member (Traction), Railway Board, Rail Bhawan, New Delhi.

  
21/9/2020  
(Sanjiv Swarup)  
**Pr.Exe.Dir.Stds. Electrical**



**Status of un-modified motor support in WAP7 & WAG9/9H three phase locomotives**

Position on: 25.08.2020

Rly	Shed	TM location	WAP7	WAG9H	Total no. of bogies	Balance to be modified	PDC
CR	AQ	1,2	28	204	232	19	Dec'20
		3	30	257	287	197	
	KYN	3	0	96	96	96	
ECR	GMO	3	0	4.5	9	15	
SCR	LGD	3	84	206	290	154	
	KZJ	3	0	100	200	20	
SER	TATA	3	0	49	44	05	

**Note:** Following sheds have already modified motor support in all locations of bogies.

HWH, WAT, LDH, CNB, BRC, ED, BNDM, SRC, ET, NKJ, BIA, RPM, TKD, BSL, GZB.

**Status of modified/unmodified brake lever of WAG-9/9H locomotive as per MS 455 issued on Dec'16**

SN	Shed	No. of WAG-9/9H locos	Modified with TBU/PBU	Un-Modified with TBU/PBU	Converted to conventional rigging
1	BSL	29	13	0	16
2	AQ	152	83	69	9
3	KYN	69	16	53	0
4	GMO	171	02	166	03
5	WAT	167	45	88	34
6	LDH	129	22	0	107
7	CNB	93	12	0	81
8	LGD	129	28	53	48
9	KZJ	100	38	14	48
10	TATA	133	0	113	20
11	BIA	112	38	55	19
12	TKD	103	82	0	21
13	NKJ	59	28	10	21
14	BNDM	19	0	0	19
<b>Total</b>		<b>1465</b>	<b>407</b>	<b>621</b>	<b>446</b>



## Daily Position of Provision of 2 High Reach Pantograph in electric locomotives on date 27- Aug-2020

RLY	Shed	Cummulative position. How many locos with type of loco and its number provided with 2 HRPTs so far	Population of HRPTs
CR	AQ	26 WAG-9 32005, 31264, 32032, 32052, 31114, 31116, 32073, 31271, 31276, 31981, 31110, 32374, 32380, 31027, 31270, 31277, 31439, 31273, 31484, 31359, 31076, 31464, 31224, 31278, 31259, 31104	58
CR	KYN	11 WAG9 (31575, 32431, 31453, 31384, 32262, 31387, 32242, 31382, 31367, 31584, 31450)	27
CR	BSL	17 WAG9 (31560, 31406, 31738, 31642, 31403, 31516, 32401, 31402, 31404, 31405, 32432, 32273, 32429, 31645, 32274, 32377, 32270)	35
NR	LDH	23 WAG9 (32142, 32387, 32455, 31665, 32166, 32286, 32315, 32263, 32246, 32317, 32436, 32454, 32585, 32283, 32252, 32397, 32584, 32261, 32680, 32186, 32383, 32193, 32313) 3 WAG-7 (24590, 24583, 24580)	50
NR	TKD/D	10 WAP1 (22024, 22028, 22029, 22036, 22039, 22040, 22049, 22050, 22056, 22076) 1 WAP4 (22345)	33
NR	GZB	23 WAP5 (30001, 30002, 30003, 30011, 30014, 30018, 30021, 30022, 30024, 30025, 30043, 30098, 30100, 30132, 30133, 30135, 30136, 30141, 30146, 30149, 30164, 30165, 30163)	47
NR	KJGY	4 WAG-9 (32805, 32714, 32804, 32803)	8
NCR	JHS		21
NCR	CNB	25 WAG9 (32265, 32394, 32233, 32229, 32549, 32433, 32291, 32308, 32268, 32338, 32645, 32318, 32266, 32346, 32244, 32446, 32307, 32545, 32256, 32309, 32255, 32448, 32550, 32398, 32287.)	50
ER	ASN	0	0
ER	HWH	0	0
ER	BWN	16 WAG9 (31619, 31416, 32515, 32563, 32516, 32560, 31418, 31409, 32557, 32451, 34015, 34011, 32450, 32562, 31551, 32449)	33
ECR	GMO	In 17 WAG9 Locomotive both side high reach Pantograph provided. (1. 32289, 2. 32339, 3. 32652, 4. 31853, 5. 31473, 6. 31859, 7. 31857, 8. 31509, 9. 31533, 10. 31488, 11. 31413, 12. 31834, 13. 31508 14. 31489, 15. 31546, 16. 31532, 17. 31467)	35
ECR	MGS	3(WAG7-27038, 27032, 27057)	6
ECR	BJU	5 WAG-9 (32334, 32444, 32445, 32457, 32340)	10
ECOR	ANGL	0	2
ECOR	VSKP	10 WAG-9 (31625, 32607, 32810, 32809, 31623, 32693, 32690, 31987, 32682, 32683)	21
SCR	KZJ	23 WAG-9 (34001, 34002, 32542, 32247, 32458, 32325, 32718, 32280, 32408, 32410, 32649, 32389 GY, 32279, 32520, 32461, 32282, 32456, 32044 GY, 32695 32720, 32322, 32323) (32066 GY HRPTs Provided by ELS/LGD)	46 ( All Loco's Completed)
SCR	LGD	16 WAG9 (32700, 31143, 32367, 32655, 32480, 32418, 32681, 32653, 32066 GY, 32413, 32481, 32670, 32363, 32798, 32512, 32513)	43



SCR	BZA	03 WAG-7 (28249,28424,28464)	8
SER	BKSC	3 WAG-9 - 32755, 32672,32521	14
SER	BNDM	3 WAG9-32384,32655,32681	10
SER	SRC	In 04 WAP7 locomotives both side High Reach Pantograph provided (as on 17.08.2020) (37320, 37324, 37326, 37336)	12
SER	TATA	08 WAG9 (32324, 32647, 32582, 31432, 32576, 31716, 31899, 31425), 02 WAG7 (27602, 27597)	27
SER	ROU	03 WAG9 (32597,32281,32302)	29
SECR	BIA	8 WAG-9H (32688, 31844,31806,32679,32757,32807, 32807, 31886)	32
SR	AJJ	0	0
SR	ED	5 WAG7( 27460 , 27486 , 28027,27491 , 27271)	12
SR	RPM	0	0
WCR	ET	2 WAP 7 (39006, 39097)	7
WCR	NKJ	5 Nos. WAG-9 (31943, 32290, 32468 , 32070,32514)	17
WCR	TKD	26 WAG9 (31185,32303, 32251, 32775, 32331, 31210, 32294, 31183,31186, 32773, 31196,31607,31471,31181, 31297, 32335,31614, 32170, 32264, 32295, 32332, 31610, 31170, 32321,32654,31503,)	60
WR	BL	5 Nos.- WAP-4 (22293, 22324, 22351,22344' 22279) 7 WAG-7(28727, 28621, 28752, 24691,28726,24689,28640)	64
WR	BRC	1 WAP-5 (30185) 28 WAP-7 (30470, 30474, 30480, 30526, 30527, 30531, 30569, 30585, 30719, 30759, 30761, 30767, 37126, 37128, 37163, 37164, 37302, 37303, 39018, 39027, 39065, 39103, 37175, 30574, 30637, 37111, 30634)	144
TOTAL	IR	WAG9=249 WAP7=34 WAP5= 24 WAG7=23 WAP4=6 WAP1=10	915