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,
Manak Nagar, LUCKNOW – 226011
Tel. : 91-522-**2450374** Fax : 0522-**2462581**
e-mail : sredse@gmail.com

D.O.No.EL.8.5.10.1 Dt: 05.10.2020

Dear Sri Tiwariji,

Sub: PCDO for the month of September, 2020.

1.0 HIGHLIGHTS

Nil

2.0 RELIABILITY IMPROVEMENT

2.1 RDSO has analyzed & compiled the failures of Auxiliary Machines used in 3-phase Electric locomotives & proposed to CLW vide letter No. EL/3.2.176/2 dated 15.09.2020 to conduct a technical quality audit of firms jointly by CLW & RDSO to check their adherence to approved quality plan/specification including manufacturing process & BOM etc. to find out the areas which needs improvement. CLW has been requested to confirm the date of quality audit in consultation with firm under intimation to this office to associate accordingly.

2.2 M/s BHEL has been advised to improve the reliability of PCB cards and submit investigation report for the cause of intermittent isolation of harmonic filter vide this office letter No.EL/11.5.5/21 dated 21.09.2020 and 01.09.2020 respectively.

2.3 M/s BTIPL has been advised to improve the reliability of PCB cards vide letter No.EL/11.5.5/21 dated 21.09.2020.

2.4 M/s BTIPL has asked to submit investigation report of design defect in M/s BTIPL make traction motor speed sensor at ELS/AQ and improve reliability vide letter No.EL/11.5.5/1/IGBT/BTIPL dated 31.08.2020.

2.5 M/s BHEL has been advised to improve the reliability of M/s Jaquet make active speed sensors in different locomotives vide letter No.EL/3.1.35/17(BHEL) dated 23.09.2020.

3.0 DEVELOPMENTAL ACTIVITIES

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

The End of Train Telemetry (EoTT) design documents No. OBE-00-17-xXX Version:A, July 2020 including Type test protocol, communication protocol, BOM,QAP, protection scheme, data sheets & block diagram submitted by M/s Siemens through mail dt. 15.09.2020 have been examined in reference with FRS No.RDSO/2019/EL/FRS/0025, Rev'0' dt. 25.06.2019. There are numerous clauses of their design document which do not comply the FRS/0025. RDSO vide letter No.EL/4.2.15/EoTT/Siemens dated 29.09.2020 has advised ECoR& M/s Siemens the compliance status of design document and impact of deviation given by them on functionality of EoTT system offered by M/s Siemens. Type test protocol, communication protocol, BOM, QAP, protection scheme, data sheets & block diagram are found to be generally in order.

3.2 **Development of Re-generative braking in WAG7 locomotive**
Northern Railway has been once again requested to monitor the performance of regenerative braking system provided in the locomotives No.24581/WAG7 of ELS/LDH by deploying the locomotive in nominated route with fixed Loco Pilot and coaxed by foot-Plating CLI (if possible) for a sufficient period of time vide letter No.EL/3.2.19/RB dated 02.09.2020.

3.3 RDSO vide letter No.EL/2.2.1/High Reach/Black Stone dtd. 07.09.20, M/s Black Stone Terry Engineering Company has been advised the deficiencies for manufacture and supply of High Reach Pantograph.

3.4 A large number of trials (40 with Oliver-G) have been conducted so far with Schunk make High Reach Pantograph jointly with RDSO and Zonal Railways over WR, NR, NWR & SWR and are yet to arrive at a satisfactory solution of a design with acceptable sparks during train operation under Conventional and High Rise OHE with Schunk make pantograph. M/s Schunk have, therefore, been advised to critically examine the performance of pantograph of their make with different types of Aerofoils during trials done so far and arrive at a design, which would offer acceptable solution, where satisfactory current collection is achieved in both Conventional and High Rise OHE sections in both the configurations of pantograph in locomotive at the earliest with one design of pantograph. In this connection, a letter has been issued by RDSO vide letter No.EL/2.2.1/High Reach dtd. 10.09.20 to the firm.

3.5 After scrutiny of the reply of High Reach Pantograph of M/s ACCEL make, the minor deficiencies noticed has been advised by RDSO vide letter No.EL/2.2.1/High Reach/ACCEL dtd. 10.09.20.

3.6 RDSO vide letter No.EL/3.2.15/3-phase dtd. 16.09.20, M/s ELGI is advised to submit drawing of safety sling as per RDSO/2006/EL/SMI/0242 Rev.'2' and include safety sling in their BOM as per spec. for their different type of compressors as RR20100, RR20100 CGM, RR20100 CC and RR20100 OF (M).

3.7 After scrutiny of documents of design, drawing & BOM for manufacture and supply of High Reach Pantograph of M/s DRE make, the minor deficiencies noticed has been advised by RDSO vide letter No.EL/2.2.1/High Reach/DRE dtd. 18.09.20.

3.8 Capacity assessment of M/s Nike Energy Varanasi has been carried out on 22.09.2020. Report is under preparation.

3.9 RDSO vide letter No.EL/2.2.1/High Reach dtd. 28.09.20 advised M/s Schunk that validated design through CFD simulation and wind tunnel test may be undertaken before conducting further current collection trials with new design Cam and optimized Aero-foils so that an optimized design of pantograph is available for both types of OHE and a decision to provide the new design can be taken in all supplied High Reach Pantograph and new supplies in future.

3.10 Online application ID No.1039 dated 28.07.2020 of M/s Vajra Rubber Products Private Limited, Thrissor, Kerala for fresh vendor registration for manufacturing and supply of Spheriblocs for 3-phase electric locomotives has been scrutinized and some major/minor deficiencies were found. The same has been communicated to firm for further processing the application vide this office letter No.EL/3.1.35/12(SB)/VRP dated 28.08.2020.

3.11 Online application ID No.912 dated 10.02.2020 of M/s Sujan Industries, Palghar, Maharashtra for fresh vendor registration for manufacturing and supply of Spheriblocs for 3-

phase electric locomotives has been considered for capability assessment after the compliance of major deficiencies by firm. The same has been intimated to firm vide this office letter No. EL/3.1.35/12(SB)/Sujan dated 24.09.2020.

3.12 RDSO examined the comparative chart of WAGC3 & Proposed WAG10 loco (to be converted from WDG3 Alco Diesel loco) and advised DMW vide letter No.EL/3.2.1/Diesel-Electric, dated 23.09.2020 accordingly for considering the proposed WAG10 loco as new loco owing to change in axle load from 20.5t(WAGC3) to 21.5t (WAG10 & fresh speed trials may be required as per Policy Circular No.6 (2018) & Gazette of India (Extraordinary), Part II-Section 3-Sub-section (I), October 01, 2018.

3.13 Clarification sent to M/s Italcertifier/Italy vide letter No.EL/3.1.35/4 dated 15.09.2020 for audit and certification of hardware/software of WAP7 loco in push-pull mode.

3.14 Design review/ comments on technical description of Traction Motor has been reviewed by concerned expert group and communicated to M/s MELPL vide letter No.EL/3.1.35/24 dated 25.09.2020.

3.15 Design review/ comments on current collection test report as per Procurement cum Maintenance of Electric locomotive Factory at Madhepura has been reviewed by concerned expert group and communicated to M/s MELPL vide letter No.EL/3.1.35/24 dated 24.09.2020.

3.16 Design review/ comments on electronics card temperature test specification and electronics test report of WAG12B locomotive has been reviewed and communicated to M/s MELPL vide letter No.EL/3.1.35/24 dated 23.09.2020.

3.17 Design review/ comments on Energy Efficiency test report of WAG12B locomotive and train level performance type test specification has been reviewed and communicated with M/s MELPL vide letter No.EL/3.1.35/24 dated 11.09.2020.

3.18 Technical clarification related to Bridge Dte. for rating and performance trial of WAG11, Ver. 2 as requested by Northern Railway has been issued vide letter No.EL/11.5.5/20 dated 17.09.2020.

3.19 Compliances of CCRS observation as sought by Railway Board vide letter No.2019/CEDO/SR/21(2) dtd. 02.07.2020 has been sent to Railway Board vide this office letter No.EL/11.5.5/20 dtd. 01.09.2020.

3.20 Video Conference (VC) Meeting on TCAS was carried out on 29.09.2020 by RDSO with Zonal Railways & OEMs of TCAS to address the various issues of TCAS raised by Zonal Railways.

4.0 SPECIFICATION/STR

4.1 Specification No. RDSO/SPEC/EL/0062 (Rev 3) for Zirconium Copper Stamping for Shaft Mounted Copper Stamping type Resistance Ring design of Rotor for Traction Motor type 6 FRA6068 for WAG9/WAP7 locos has been issued on 16.09.2020 and uploaded on RDSO website.

4.2 RDSO has uploaded the draft Technical Specification No.RDSO/2020/EL/SPEC/0xxx (Rev.0) titled "Technical specification for Electric Hybrid (Electric + Battery) locomotives" on RDSO website for suggestion/comments vide letter No.EL/3.1.28 (DML), dated 25.09.2020.

4.3 The draft Functional Requirement Specification for Speed Interface Unit for 3-phase Electric locomotive was prepared & posted on RDSO website for comments/suggestions of all the stakeholders. Zonal Railways & OEMs expressing reservations regarding implementation of proposed scheme. The OEMs are not in favour of implementation of proposed Speed Interface Unit (SIU) by mentioning about complexity, reliability & cost implications of the proposed scheme. The competent authority has approved that proposed development of SIU may not be taken forward further.

4.4 RDSO has uploaded the revised draft specification bearing no. RDSO/2008/EL/SPEC/0067 (Rev.3) titled "Specification for cable transit system with EPDM Rubber Modules in Electric locomotives/EMU/MEMU/METRO" on RDSO website for suggestion/comments vide letter No.EL/2.2.37, dated 21.09.2020.

4.5 RDSO has uploaded the revised draft Schedule of Technical Requirement bearing no. RDSO/2014/EL/STR/0082 (Rev.1) titled "Cable transit system with EPDM Rubber Modules for Electric locomotives/EMU/MEMU/METRO" on RDSO website for suggestion/comments vide letter No.EL/2.2.37, dated 21.09.2020.

4.6 Specification No.RDSO/2010/EL/SPEC/0108, Rev.'1' has been revised and circulated to Railways for comments/suggestions vide letter no. EL/3.1.35/32 dated 18.09.2020.

4.7 Specification No.RDSO/2017/EL/SPEC/0129, Rev.'1' has been revised and circulated to different Directorate of RDSO for comments/suggestions vide note no. EL/3.1.35/36 dated 28.08.2020.

4.8 Modification sheet No.RDSO/2020/EL/MS/0482, Rev. '0' has been issued for "Energy saving in Three-Phase Freight Locomotives".

5.0 PROTOTYPE TESTING/QUALITY AUDIT

5.1 Prototype testing of traction motors type 6FRA6068 of M//s Govik Electricals Pvt. Limited was carried out by RDSO in association with CLW, at firms premises at Mumbai from 17.09.2020 to 23.09.2020.

5.2 Inspection of Prototype testing of Integrated Converter for upgraded 9000 HP WAG9HH Freight locomotive manufactured by M/s Siemens has been jointly done by CLW and RDSO/BPL at Siemens Works Nasik as per given protocol from 07.09.2020 to 12.09.2020.

6.0 OTHER ITEMS

6.1 Revised documents/ details and Quality Assurance Plan submitted by M/s NSK vide their mail dt. 26.08.2020 for traction motor bearing for TM type 6FRA6068 have been examined and found to be in order. RDSO vide letter No.EL/2.2.13/NSK dated 01.09.2020 has requested Counsellor (Railway Advisor), Embassy of India, Tokyo(Japan) for carrying out the Capability Assessment of M/s NSK, Ltd, Japan.

6.2 The prototype test results of traction motor No. 2019-0001 type YQ-190-28 for Kolkata Metro Project manufactured by M/s CRRC Zhuzhou Motor Co. Ltd, China for IGBT based 3 phase drive propulsion has been provisionally cleared for further fitment & field trial vide note No. EL/3.2.182/K.Metro/Zhuzhou dated 16.09.2020.

6.3 Submitted design document of traction Motor type TME-49-35-4 for Under Slung EMUs/ MEMUs through PS&EMU Directorate note No. EL/1.3.16.6/Under-Slung MEMU/Medha dated 14.08.2020 had been examined as per RDSO specification No. RDSO/PE/SPEC/EMU/0096-2008 (Rev 4) of Dec-2009 along with ICF Annexure ICF/EMU/0096-01, Rev.02). Comments have been communicated to PS & EMU Directorate vide Electrical Directorate note No.EL/3.2.182/Under-Slung EMU MEMU/Medha dated 07.09.2020.

6.4 Clarifications on design document related to Motorette testing on insulation system of traction Motor type IM3302AZ for RCF MEMU Project have been received from BHEL through PS&EMU Directorate note No. EL/1.3.16.7/ON BOARD/RCF/BHEL dtd. 24.07.2020 had been examined in reference with respective IEC and contract specification. Comments on Motorette testing and on pending issues have been communicated to PS & EMU Directorate vide Electrical Directorate note No.EL/3.2.182/OTM/163/BHEL dated 07.09.2020.

6.5 Comments to M/s Alstom on documents pertaining to Description and Drawings of Traction Motor NHD0000266331 Rev 8, Shock and Vibration Doc No.NRD0000572141 Rev.1, test specification Doc No.ESS-14-00078/30, Rev.1. Motorette test specification Doc No.NRD0000572133 Rev.2, Type test report of Traction Motor Document No.NRD0000572260 Rev 2 & Test protocol of traction motor Doc No.NHD0000266652 Rev 15 and traction motor maintenance manual has been furnished vide this office note No.EL/3.2.182(Madhepura) dated 18.09.2020.

6.6 Comments on Draft Schedule of Functional and Technical requirements for private train operations were communicated to Carriage Dte. Vide note No.EL/8.1.25.1 dated 04.09.2020 & 24.09.2020.

6.7 EBD simulation results for different falling gradient has been provided to WCR on their request vide this office letter No.EL/11.5.5/20 dated 08.09.2020.

Warm Regards'

Encl: Annexure I ,II & III

Yours sincerely,

5/10/2020

(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, New Delhi.

5/10/2020

(Sanjiv Swarup)
Pr.Exe.Dir.Stds. Electrical

Annexure-I

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

Position on: **25.09.2020**

Rly	Shed	TM location	WAP7	WAG9H	Total no. of bogies	Balance to be modified	PDC
CR	AQ	1,2	28	204	232	17	Dec'20
		3	30	257	287	177	
	KYN	3	0	96	96	96	
ECR	GMO	3	0	4.5	9	15	
SCR	LGD	3	84	206	290	154	
	KZJ	3/4	0	100	200	20	
SER	TATA	3	0	49	44	05	
SECR	BIA	3/4	0	57	114	15	

Note: Following sheds have already modified motor support in all locations of bogies.
HWH, WAT, LDH, CNB, BRC, ED, BNDM, SRC, ET, NKJ, RPM, TKD, BSL, GZB.

Annexure- II

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	85	67	9
3	KYN	69	16	53	0
4	GMO	171	02	166	03
5	WAT	175	45	87	43
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	114	38	56	20
12	TKD	103	82	0	21
13	NKJ	59	28	10	21
14	BNDM	19	0	0	19
Total		**1475**	**409**	**619**	**456**

Annexure-III

Position of Provision of 2 High Reach Pantograph in electric locomotives as on 2.10.2020

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	**27 WAG-9(** 32005, 31264, 32032,32052, 31114,31116, 32073, 31271, 31276, 31981, 31110, 32374, 31280, 31027, 31270, 31277, 31439, 31273, 31484, 31359, 31076,31464, 31224, 31278,31259, 31104,31111)	58
CR	KYN	**12 WAG9 (32194, 31575,32431, 31453, 31384, 32262,31387,32242, 31382, 31367, 31584, 31450)**	25
CR	BSL	**18 WAG9 (**31560, 31406, 31738, 31642, 31403, 31516, 32401, 31402, 31404, 31405, 32432, 32273, 32429, 31645, 32274, 32377,32270, 41043)	36
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, 30011, 30014, 30018, 30021, 30022, 30024, 30028, 30030, 30043,30098, 30100, 30132, 30133, 30135, 30141, 30146, 30149, 30163, 30164, 30165, 30187, 30188)	47
NR	KJGY	**4 WAG-9** (32805, 32714, 32804, 32803)	8
NCR	JHS	0	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)	20
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	4 **WAG-9** - 32755, 32672,32521, 32522	13

SER	**BNDM**	5 WAG9-32384,32655,32681,32653,32700	11
SER	**SRC**	**In 04 WAP7 locomotives both side High Reach Pantograph provided (as on 12.09.2020)** (37320, 37324, 37326, 37336)	12
SER	**TATA**	**09 WAG9** (32324, 32647, 32582, 31432, 32576, 31716, 31899, 31425, 31603)	23
SER	**ROU**	03 **WAG9** (32597,32281,32302)	29
SECR	**BIA**	10 **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**	**3 WAP 7 (39006, 39097 , 37054)**	8
WCR	**NKJ**	**5** nos **WAG-9** (31943, 32290, 32468 , 32070,32514)	17
WCR	**TKD**	29 **WAG9** (31807, 31415, 31185,32303, 32251, 32775, 32331, 31210, 32294, 31183,31186, 32773, 31196,31607,31471,31181, 31297, 32335,31614, 32170, 32264, 32295, 32332, 31610, 31170, 32321,32654,31503,31634)	60
WR	BL	5 nos- **WAP-4** (22293, 22324, 22351,22344' 22279)8 **WAG-7**(28727, 28621, 28752, 24691,28726,24689,28640,28619)	64
WR	**BRC**	1 **WAP-5** (30185)28 **WAP-7** (30470, 30474, 30480, 30526, 30527, 30531, 30569, 30585, 30598, 30719, 30759, 30761, 30767, 37126, 37128, 37163, 37164, 37302, 37303, 39018, 39027, 39065, 39103, 37175, 30574, 30637, 37111, 30634)	144
TOTAL	IR	**WAG9=261 WAP7=35 WAP5= 24** **WAG7=22 WAP4=6 WAP1=10**	910