



भारत सरकार

रेल मंत्रालय

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

अनुसन्धान अभिकल्प एवं मानक संगठन

RESEARCH DESIGN AND STANDARD ORGANISATION
MANAK NAGAR LUCKNOW-226011

बैटरी और बैटरी चार्जर की स्थिति की निगरानी के लिए एलएचबी टाइप
ईओजी/एचओजी एसी के स्विच बोर्ड कैबिनेट और एलएचबी टाइप
ईओजी/एचओजी नॉन-एसी कोच के एलवी पैनल में 4.5 किलोवाट अंडरस्लंग
कांस्टेंट वोल्टेज रेगुलेटेड कम इमरजेंसी बैटरी चार्जर के ऑन-बोर्ड संकेत के
प्रावधान के लिए संशोधन पत्रक.

MODIFICATION SHEET FOR PROVISION OF INDICATIONS ON-BOARD OF
4.5kW UNDERSLUNG CONSTANT VOLTAGE REGULATED CUM EMERGENCY
BATTERY CHARGER IN THE SWITCH BOARD CABINET OF LHB TYPE
EOG/HOG AC AND IN LV PANEL FOR LHB TYPE EOG/HOG NON-AC
COACHES TO MONITOR BATTERY AND BATTERY CHARGER STATUS

MODIFICATION SHEET NO. RDSO/PE/MS/AC/0095-2024 (Rev 0)

SN	DATE OF AMENDMENT	AMENDMENT NO.	PAGE NO.	REASON FOR AMENDMENT

अनुमोदित

APPROVED BY:

20/11/2024
प्रधान कार्यकारी निदेशक / पीएस एंड ई •एम •यू

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RESEARCH DESIGNS AND STANDARDS ORGANISATION
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Modification sheet no RDSO/PE/MS/AC/0095-2024(Rev-0)

1.0 TITLE:

- 1.1 Modification Sheet for provision of indications on-board of 4.5 kW Underslung Constant Voltage Regulated Cum Emergency Battery Charger indications in the switch board cabinets of LHB type EOG/HOG AC and in LV panel of LHB type EOG/HOG Non-AC coaches to monitor battery and battery charger status..

2.0 FOREWORD:

- 2.1 At present, the Switch Board Cabinets installed in AC coaches have the provision of Green/White and Red Pilot Lamp indication for RBC OK and Battery not Healthy respectively. When RBC supply is ON, then the feedback received from RBC will show Green/White (RBC OK) indication and when RBC is Defective then the feedback received from RBC will show Red (Battery not healthy) indication.
- 2.2 In the previous variants of Switch Board cabinets used in LHB AC Coaches, Switch Board Cabinets of Hot Buffet Car and the Switch Board cabinet used for single plant operation in the Power Car, Battery Boost and Battery float indications were provided to check whether the battery is working in boost stage or float stage.
- 2.3 In the LHB Non-AC Coaches, there is no provision of on-board indications to monitor the battery or battery charger status.
- 2.4 On noticing the indication on the panel, the escorting electrical staff may attend the enroute failure of battery charger before the battery gets fully discharged.

3.0 BRIEF DESCRIPTION

- 3.1 As a measure of system improvement, the modification need was noticed to solve the issue of monitoring the Battery charger status onboard in case of 4.5 kW underslung RBC cum EBC (Regulated Battery Charger cum Emergency Battery Charger), so that enroute failure of battery charger before the battery gets fully discharged may be attended.
- 3.2 To implement the modification, coaches which are provided with 4.5kW UREBC are to be accessorized with three numbers of Indications lamp for RBC OK(Green), EBC ON(Red) and Battery not healthy (Red) in the switch board cabinets of LHB type EOG/HOG AC and in LV panel of LHB type EOG/HOG Non-AC coaches.

4.0 MODIFICATION TO BE CARRIED OUT:

4.1 LHB type 1-Tier, 2-Tier, 3-Tier AC coaches (including 3-Tier economy), Power car Pantry car and their composite coaches with 4.5 kW underslung RBC cum EBC only:

4.1.1 Coaches equipped with old variants of Switch Board Cabinets:

- a) The Switch Board Cabinets as per RCF specification no. EDTS 073, EDTS 134, EDTS 104 and RDSO specification no. RDSO/PE/SPEC/AC/0184-2015 (Rev.0) is provided with S1H03 and S1H06 indication lamp for Battery charger float and boost respectively. The connections of these indications are to be rearranged as per sheet no. 23 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019 (Rev.0) enclosed as Annexure A with S1H03 and S1H06 for RBC OK and EBC ON respectively. Additionally one red indication lamp for battery not healthy to be installed in the switch board cabinet at place of installation S1H15 indication lamp and connection of this Indication lamp S1H15 is to be arranged as per sheet no. 24 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019 (Rev.0) enclosed as Annexure B.



Battery Charger
Float Mode

Battery Charger
Boost Mode

Old Variant of Switch Board Cabinet

- b) For the wires coming from 4.5 kW RBC cum EBC, wires are to be laid as per the harness details furnished below:

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Description	Cable size (in mm ²)	Length (in mm)	From	To	Ferrule No.	Remarks
5X1.5 sq.mm multi-core E-beam cable 600/1000V color 4nos.Chocolate, 1 no.GNVE	5X1.5	15500	RBC	SBC	320405.21	RBC OK (Ch)
					320405.21A	EBC ON (Ch)
					320405.22	Battery not Healthy (Ch)
					420204.03	Common Positive (Ch)
					420210.03	Earth-GNVE

- c) The connection in the RBC cum EBC to be made through auxiliary interlocks from the incoming supply contactor/relay present in the RBC cum EBC i.e. NO for RBC OK and NC for EBC ON.
- d) Connection for Battery not healthy to be provided through additional card provided in REBC unit as per RDSO drawing no RDSO/PE/SK/AC/0254-2024 (Rev-0) enclosed as Annexure C. This is a general schematic diagram in Annexure C. The modification is to be done on card level to meet the general schematic and should acknowledge the desirable indication on-board.

4.1.2 Coaches equipped with new variants of Switch Board Cabinets:

- a) The Switch Board Cabinets as per RDSO specification no. RDSO/PE/SPEC/AC/0184-2015 (Rev.1), RDSO/SPEC/AC/0192-2018 (Rev.1) and RDSO/PE/SPEC/AC/0200-2020 (Rev.0) are already provided with S1H03 and S1H06 PCB based indication LED/ indication pilot lamp for RBC OK and Battery not healthy respectively. The spare S1H15 indication lamp (Red) to be used for battery not healthy and connection of this Indication lamp S1H15 is to be arranged as per sheet no. 24 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019(Rev.0) enclosed as Annexure B.



RBC OK

Battery not Healthy

New Variant of Switch Board Cabinet

- b) Existing Indication S1H06 for Battery not healthy is now to be rewrite as EBC ON.

- c) For the wires coming from 4.5 kW RBC cum EBC, if wires are not present then, wires are to be laid as per the harness details furnished below

Description	Cable size (in mm ²)	Length (in mm)	From	To	Ferrule No.	Remarks
5X1.5 sq.mm multi-core E-beam cable 600/1000V 4 nos.Chocolate, 1 no.GNVE	5X1.5	15500	RBC	SBC	320405.21	RBC OK (Ch)
					320405.21A	EBC ON (Ch)
					320405.22	Battery not Healthy (Ch)
					420204.03	Common Positive (Ch)
					420210.03	Earth-GNVE

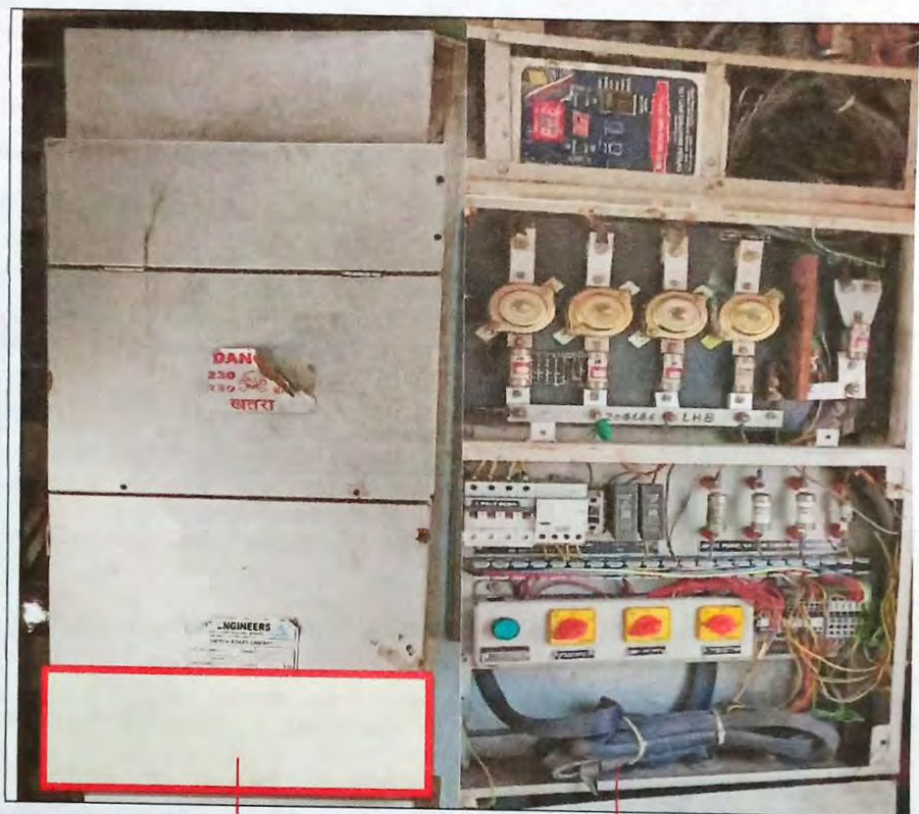
- d) If not done already, the connections in the UREBC to be made through auxiliary interlocks from the incoming supply contactor/relay present in the RBC cum EBC i.e. NO for RBC OK and NC EBC ON.
- e) Connection for Battery not healthy to be provided through additional card provided in REBC unit as per RDSO drawing no RDSO/PE/SK/AC/0254-2024 (Rev-0) enclosed as Annexure C. This is a general schematic diagram in Annexure C. The Modification to be done on card level to meet the general schematic and should acknowledge the desirable indication on-board.

4.2 LHB type Non-AC Coaches (LWSCN, LGS, LSLRD etc) with 4.5 kW underslung RBC cum EBC only:

- 4.2.1 The Switch Board Cabinets as per RCF specification no. EDTS 355 is not provided with any indication lamp for monitoring the Battery/Battery Charger. The modifications work is as under:
- a) The On-board LV panel cover to be cut for installation of S1H03, S1H06 and S1H15 indication lamps for RBC OK, EBC ON and Battery not healthy respectively. The RCF drawing no. CC72083 duly demarcating the position of installation of indication Lamp is enclosed as Annexure D.

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Position of installation of indication lamps

LV Panel of Non-AC Coach

a) Closed View

b) Open View

- b) The connections of indications are to be arranged as per sheet no. 23 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019 (Rev.0) enclosed as Annexure A with S1H03 and S1H06 for RBC OK and EBC ON respectively and for Indication S1H15 is to be arranged as per sheet no. 24 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019 (Rev.0) enclosed as Annexure B.
- c) The connection in the RBC cum EBC to be made through auxiliary interlocks from the incoming supply contactor/relay present in the RBC cum EBC i.e. NO for RBC OK and NC for EBC ON.
- d) Connection for Battery not healthy to be provided through additional card provided in REBC unit as per RDSO drawing no RDSO/PE/SK/AC/0254-2024 (Rev-0) enclosed as Annexure C. This is a general schematic diagram in Annexure C. The Modification is to be done on card level to meet the general schematic and should acknowledge the desirable indication on-board.

- e) The wires are to be extended from 4.5 kW RBC cum EBC to the onboard LV panel, wires are to be laid as per the harness details furnished below:

Description	Cable size (in mm ²)	Length (in mm)	From	To	Ferrule No.	Remarks
5X1.5 sq.mm multi-core E-beam cable 600/1000V color 4nos.Chocolate, 1 no.GN Y E	5X1.5	15500	RBC	SBC	320405.21	RBC OK (Ch)
					320405.21A	EBC ON (Ch)
					320405.22	Battery not Healthy (Ch)
					420204.03	Common Positive (Ch)
					420210.03	Earth-GN Y E

5.0 APPLICATION:

The different variants of Switch Board Cabinets as per RCF specification no. EDTS 073, EDTS 104, EDTS 134 & EDTS 355 and RDSO specification no. RDSO/PE/SPEC/AC/0184-2015 (Rev.0), RDSO/PE/SPEC/AC/0184-2015 (Rev.1), RDSO/SPEC/AC/0192-2018 (Rev.1) & RDSO/PE/SPEC/AC/0200-2020 (Rev.0) which are used in LHB/EOG Type AC and Non-AC coaches.

6.0 MATERIALS REQUIRED:

The materials required to be purchased from RDSO approved sources as given below:

S.N	Description	Make	Remarks
a)	LED type indicator RBC OK (Green),EBC ON (Red) and Battery not healthy (Red) Diameter 22.5 mm each.	Siemens, Schneider, Teknic, GE, L&T, Eaton, ABB	
b)	E beam cables for control and Power	As per RCF Specification no. EDTS 132,Rev C or latest	
c)	Computer generated ferrules Class R22/R23 in EN 45545-2 HL 3 Category (self-fire extinguishing low smoke & low toxicity) Test report from EN certified lab for EN45545-2 HL-3 shall be furnished by the firm with supplied model no. and company name at the time of prototype and acceptance test.	Tyco, Phoenix, MV, Electro systems, Brady	
d)	Terminal block	Phoenix, Wago, Weidmuller & Connectwell	

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7.0 DRAWING/ REFERENCE:
Attached Annexures.

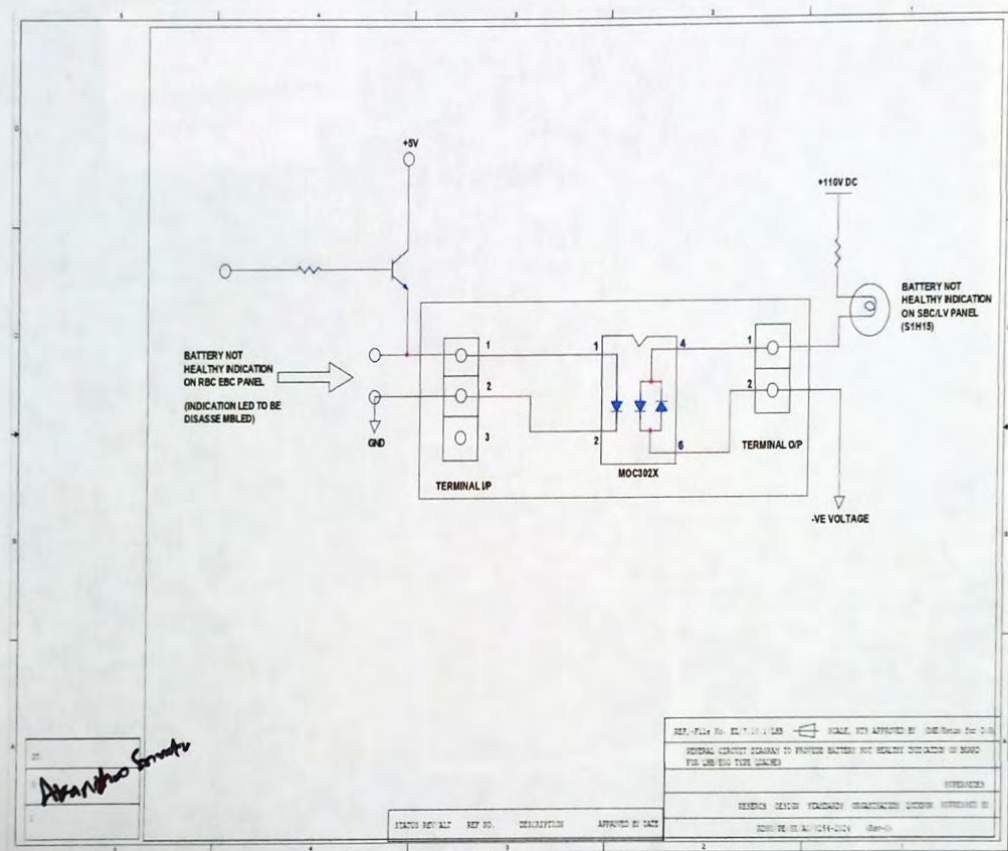
8.0 AGENCY FOR IMPLEMENTATION

All Zonal Railways and Workshops of Indian Railways.

9.0 ENCLOSURES

S. No.	Annexure	Description
a)	Annexure A	Sheet no. 23 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019 (Rev.0)
b)	Annexure B	Sheet no. 24 of 48 of RDSO drawing no. RDSO/PE/SK/AC/0206-2019 (Rev.0)
c)	Annexure C	RDSO drawing no RDSO/PE/SK/AC/0254-2024 (Rev-0).
d)	Annexure D	RCF drawing no. CC72083 with location of the indication lamps is marked

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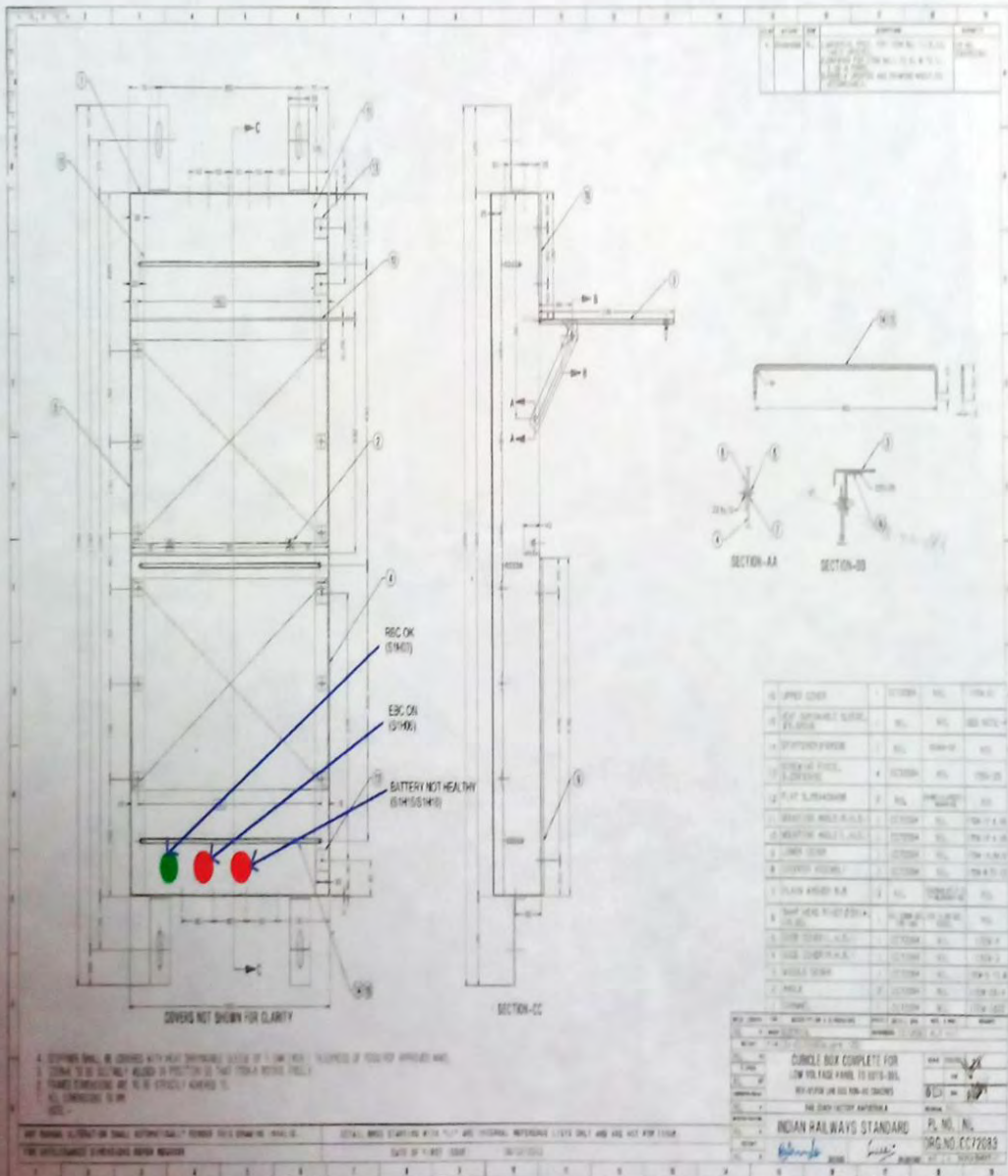
ANNEXURE C

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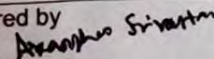
ANNEXURE D

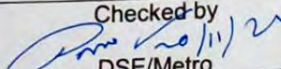
10.0 DISTRIBUTION LIST

As per list enclosed.

DISTRIBUTION LIST

CHIEF ELECTRICAL ENGINEER:	
1	Northern Railway, Baroda House, New Delhi – 110 001.
2	Central Railway, II Floor, Parcel office, CST Mumbai – 400 001.
3	Eastern Railway, Fairlie Place, Kolkata – 700 001.
4	South Eastern Railway, Garden Reach, Kolkata – 700 043
5	Southern Railway, Park Town, Chennai – 600 003.
6	Western Railway, Church gate, Mumbai – 400 020.
7	South Central Railway, Rail Nilayam, Secunderabad – 500 371.
8	East Central Railway, Dighi Distt- Vaishali, Hajipur Bihar- 844 101.
9	North Central Railway, North Central Railway, Block A, Subedarganj, Allahabad-211033.
10	South Western Railway, 1 st Floor, DRM Office, Hubli 580 020
11	South East Central Railway, Bilaspur.495004
12	North East Frontier Railway, Maligaon, Guwahati - 781001
13	North Eastern Railway, Gorakhpur – 273001
14	North Western Railway, Jaipur – 302006
15	West Central Railway, Jabalpur – 482001
16	East Coast Railway, Bhuvneshwar, Orissa – 751016
17	Konkan Railway, Belapur Bhavan, Sector-11, Belapur, Mumbai - 400614
18	Metro Railway, 33 /1 J.L. Nehru road, Kolkata- 700071
19	Integral coach factory, Perambur, Chennai - 600038
20	Rail Coach Factory, Kapurthala (Punjab) – 144 602
21	Modern Rail Coach Factory, Lalgaon, Raebareli(UP)-229120
CHIEF WORKS MANAGER:	
1	Matunga Workshop, Central Railway, Mumbai - 400 019.
2	Liluah Workshop, Eastern Railway, Howrah
3	C&W Workshop, Northern Railway, Alambagh, Lucknow-226 05
4	C & W Workshop, N. Rly., Jagdhari – 135 002
5	Mechanical Workshop, NER, Gorakhpur – 273 012
6	Carriage Workshop, Southern Railway, Perambur, Ayanavaram, Chennai – 600023.
7	SCR, Lallagudda Workshop, Lallaguda, Secunderabad - 500017
8	Carriage Workshop, Western Railway, Lower Parel, Mumbai-400013
9	CRWS, W. C. Railway, Nishatpura, Bhopal-462010
10	Carriage Workshop, NW Rly., Ajmer - 305001
11	Carriage Repair Workshop, Gadag Road, SWR, Hubli – 580 020
12	Carriage Workshop, S.W. Railway, Mysore Vishwanath.
13	Carriage Workshop, SE Rly., Kharagpur - 721301
14	New Bongaigaon, Railway Workshop, Danttal, Distt. Bongaigaon, Assam-783380
15	Carriage and Wagon Workshop, N. C. Rly., Jhansi – 248003
16	Carriage and Wagon Workshop, WC Rly., Kota - 324002
17	Carriage and Wagon Workshop, Eastern Rly., Liluha - 711204
18	Carriage and Wagon Workshop, W. Rly., Pratap Nagar, Vadodara - 390004
19	Carriage and Wagon Workshop, N Rly., Amritsar - 143001
20	Central Workshop, Golden rock, S. Rly., Trichi - 620004
OTHERS:	
1	Director, IRIEEN, Nasik Road (Maharashtra). - 422101
2	Senior Professor (Elect.), Railway Staff College, Lalbaug, Vadodara. - 390004
3	Director, IRCAMTECH, Maharajpur, Gwalior – 474 020.

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