



सत्यमेव  
जयते

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No. EL/11.5.5/5

Date: 01.08.2018

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3. M/s Florican Enterprises, F-16, B-159, Shahpura, Bhopal-462039 / A New 14/141, near community Hall, Bairagarh, Bhopal-462030. ( M.P.). E mail- [teerath@florican.com](mailto:teerath@florican.com)
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**Sub:** Minutes of the Meeting on reliability issues of traction motor temperature sensors, transformer oil pressure Sensor and fire detection unit in three phase electric locomotives.

A meeting on reliability issues of traction motor temperature sensors, transformer oil pressure Sensor and fire detection unit in three phase electric locomotives was held at ELS/ Bhilai on 19<sup>th</sup> & 20<sup>th</sup> July-2018 in presence of RDSO, CLW, Railways and manufacturers of IGBT converters.

Minutes of the meeting of the same is enclosed herewith for kind information and necessary action please.

Encl: As above.

(Suresh Kumar)  
For Director General (Elect.)

Copy to:

1. **Secretary (Electrical), Railway Board, Rail Bhawan, New Delhi-110 001.** (Kind attention: Shri A.K. Goswami, DEE/RS/RB) For kind information.

P.T.O.

2. **Chief Electrical Engineer,** *(For information and necessary action please)*

- Central Railway, HQs Office, 2<sup>nd</sup> floor, Parcel Office Bldg., Mumbai-400 001
- East Central Railway, Hajipur (Bihar)-844 101
- Eastern Railway, Fairlie Place, Kolkata – 700 001
- East Coast Railway, Railway Complex, Bhuvneshwar – 751 023
- Northern Railway, Baroda House, New Delhi-110 001
- North Central Railway, Allahabad – 211 001
- South East Central Railway, Bilaspur-495 004
- South Central Railway, HQs Office, Rail Nilayam, Secunderabad-500 071
- South Eastern Railway, Garden Reach, Kolkata- 700 043
- Southern Railway, Park Town, Chennai – 600 003
- West Central Railway, HQs Office, Opp. Indira Market, Jabalpur-482 001
- Western Railway, Churchgate, Mumbai – 4000 020
- Chittaranjan Locomotive Works, Chittaranjan – 713 331(WB)



(Suresh Kumar)

For Director General (Elect.)

Encl: As above.

32  
01/8/18  
PEDSE  
may kindly approve  
Lites  
18/8/18

Minutes of performance review Meeting held at ELS/ Bhilai and Raipur division on 19-07-2018 & 20.07.2018 regarding Propulsion equipment of GTO & IGBT based T.M. converters and traction motors temperature sensors, transformer oil pressure sensors & Fire detection unit of 3 Phase locomotives

**Members Present:**

RDSO	1.	Shri O. P. Kesari, PEDSE.
	2.	" Suresh Kumar, DSE/TPL.
	3.	" M. N. Lodhi, SSE/TPL.
	4.	" Ran Vijay, JE/TPL.
CLW	5.	" Pankaj Kumar, ADE/D&D/CLW.
Railways	6.	" B. Naskar, CELE/SECR.
	7.	" Kaushalesh Singh, Sr. DEE/TRS/BIA.
	8.	" K. Thourya, Sr. DEE/ELS/LGD.
	9.	" Atul Kumar, Sr. DEE/TRS/BNDM.
	10.	" Utpalade, Sr. DEE/OP/R.
	11.	" Jeet Ram, DEE/TRS/TATA.
	12.	" Shashank Kosta, DEE/TRS/BIA.
	13.	" K. Kiran Kumar, DEE/ELS/KZJ.
	14.	" P.K. Sharaf, ADEE/TRS/BIA.
	15.	" M. Ashok Kumar, ADEE/ELS/WAT.
	16.	" D.C. Bhingade, SSE/TRS/AQ.
	17.	" V.S. Bonde, SSE/TRS/AQ.
	18.	" Shailesh Mehta, DGM-(Project).
M/s Trolex	19.	" Ramen Purkait, assistant Manager
	20.	" Sumitava Roy Chakraborty, Service Head.
M/s B.G. Industries.	21.	" Vikash Kumar Jain, Chief Operating Officer.
	22.	" Suvom Samanta, BGI/QC.
M/s Danfoss	23.	" R. Vijay Anand, Sales Manager.
	24.	" Jagdish Goikwad, Engr.
M/s Baumer	25.	" Bhushan Balpande, sales Manager.
M/s Siemens	26.	" Akash Goel, Manager.
	27.	" Himanshu, Engr.

## 1.0 T.M. Temperature Sensor

FRPCPY for different make are as given in follow table as per the details received from ELS/HWH, ELS/TKD, ELS/LGD, ELS/BIA.

Make	Temperature sensor	2016-17	2017-18	2018-19 (Apr-Jun)
Trolex	Total Population	722	748	775
	Failure	17	15	7
	FRPCPY	2.4	2.0	3.6
Florican	Total Population	1681	1841	1856
	Failure	59	55	16
	FRPCPY	3.5	3.0	3.4
BGI	Total Population	69	314	375
	Failure	14	13	16
	FRPCPY	20.3	4.1	17.1

- 1.1 The CLW vender list only indicates the Part number of TM temperature sensors. Instead it should indicate the CLW specification No 4TMS.096.085 Dt. 26.12.2013. The CLW inspection wing and Railways inspection should strictly follow the conditions of Specification during inspection/ testing.
- 1.2 The specification indicates 2 types of sensors, one each for 6FXA7059 & 6FRA6068 types of TM. The element in 6FXA7059 TM is 96.5 +/- 0.2 mm long while in 6FRA6068 TM it is 54.5 +/- 0.2 mm. It should be insured that sensor with proper length should only be used in particulars type of TM. Using improper sensor may result in bad contact and improper temperature reading, which ultimately result in incorrect tractive effort generation.
- 1.3 The cavity for the temperature sensor in the TM is also not standard. CLW to look into the depth of the cavity in the different types of TM. Zonal Railways have reported problem of variation in the cavity depth for temperature sensors.
- 1.4 The length of sensor wire is more and at time it touches the TM body inside the sensor housing. CLW may look into the possibility of reducing the length of the wire.
- 1.5 The marking for make on the sensor should be done on sensor bolt for identification of sensor during fitment. CLW may look into.

## 2.0 Transformer Oil Pressure Sensor

FRPCPY for different make are as given in follow table as per the details received from ELS/HWH, ELS/TKD, ELS/LGD, ELS/AQ, ELS/BIA.

Make	Pressure sensor	2016-17	2017-18	2018-19 (Apr-Jun)
Baumer	Total Population	774	949	1011
	Failure	17	11	6
	FRPCPY	2.2	1.2	2.4
Troxex	Total Population	1477	1661	1691
	Failure	29	30	24
	FRPCPY	2.0	1.8	5.7
Danfoss	Total Population	45	44	44
	Failure	1	1	0
	FRPCPY	2.2	2.3	0.0

- 2.1 The technical meeting was attended by the marketing representative of M/s Danfoss and M/s Baumer. Firm were advised to ensure that next time technical personnel should be deputed for attend the meeting.
- 2.2 ELS/BNDM has intimated about 04 cases of ribbon cable failure in new locos. These need to be checked by M/s Trolex and confirm if this problem is in the entire batch. If it's a batch problem then the same need to be replaced.
- 2.3 Tests on the sensors electronics have not been included in the specification. This may be looked into by CLW.
- 2.4 M/s Trolex has already supplied prototype sample of thin film based pressure sensor. CLW may complete the field trial early.
- 2.5 M/s Danfoss has intimated that they have developed thin film based pressure sensor and will supply the same to CLW within one month for field trial.
- 2.6 M/s Danfoss has indicated that they are developing differential amplifier and will submit detail of the same to CLW/ RDSO within one month.

### 3.0 Fire Detection Unit

FRPCPY for different make are as given in follow table as per the details received from ELS/HWH, ELS/TKD, ELS/LGD, ELS/AQ, ELS/BIA.

Make	Fire Detection Unit	2016-17	2017-18	2018-19 (Apr-Jun)
Trolex	Total Population	237	323	330
	Failure	43	41	13
	FRPCPY	18.1	12.7	15.8
Siemens	Total Population	175	272	272
	Failure	27	26	13
	FRPCPY	15.4	9.6	19.1

3.1 Firms indicated that most of the failures of Fire Detection Unit (FDU) occur due to dust accumulation on electronic cards of sensor.

3.2 Railways to ensure ingress of the dust in the machine room as per different measures issued by RDSO from time to time.

### 4.0 Common Issues:

4.1 None of the firms' representative presented the failure investigation of any failed sample. This has been viewed seriously. All the firms were requested to carry out the failure investigation of each and every failed sample and share the report with RDSO, CLW and concerned Railways. The same shall be discussed in the next reliability meeting.

4.2 Railways to submit detailed investigation report as per below given format.

SN	Loco No.	Make	DOC	DOF	Defect noticed	Action taken	Warranty attended. (Yes/No)

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