सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

TECHNICAL AUDIT REPORT OF ELECTRIC LOCO SHED MUGHALSARAI (ECR) ON MAINTANCE OF BRAKE SYSTEM FOR CONVENTIONAL ELECTRIC LOCOMOTIVES

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Technical Audit Report of ELS/MGS/ECR

1. Technical audit of ELS/MGS for maintenance of Brake system (IRAB 9/10) of conventional Electric Locomotives was carried out on 29.06.2018. Observations made are as follows:

2. Storage of Spares, overhauled equipments and rubber kits:

2.1 Overhauled components of IRAB are kept separately in a room nearby overhauling area and test benches.

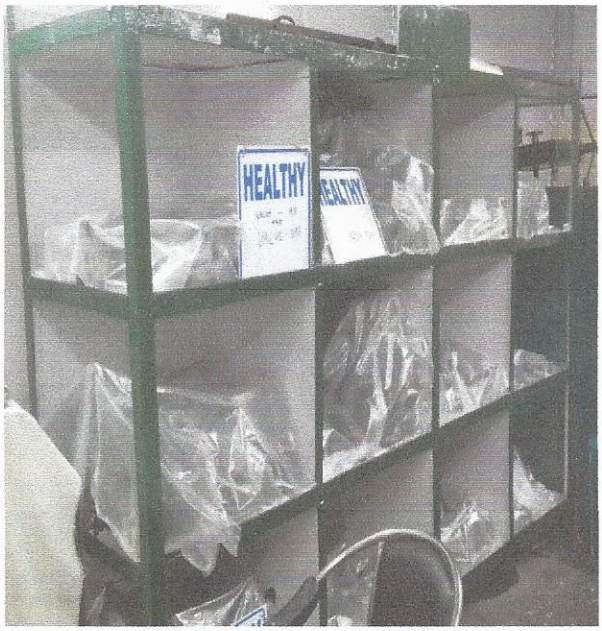

Fig.1 Photos of overhauled components wrapped with poly bags to protects from moisture

2.2 **RECOMMENDATIONS :**

2.2.1 Storage space is required to be improved to identify components of various equipment of IRAB which should be clearly segregated so that they can be picked up conveniently as per requirement.

2.2.2 Storage of rubber component in section should be in a dry and temperature controlled environment.

2.2.3 First In First out (FIFO) system should be followed to avoid prolonged storage of rubber components and use of rubber items will be within shelf-life period.

3. Maintenance Practices:

3.1 Generally brake equipments are removed from locomotive during TOH/IOH or unscheduled attention and kept in section for investigation/repair/ overhauling.

3.2 After investigation root cause findings are highlighted for corrective action.

3.3 Failed equipments are repaired /overhauled and tested on test benches. Some of the rubber items were found to be reused during repair/overhaul.

Fig.2 Test bench for various valves

3.4 **RECOMMENDATIONS:**

3.4.1 Reuse of rubber components during overhauling of various pneumatic valves should be avoided.

3.4.2 Pressure Gauges should be of large diameter for accurate readings of pressure values.

3.4.3 Regular annual calibration of gauges used for various tests should be ensured.

3.4.4 Blowing of BP and FP pipe line should be ensured during every visit on testing of loco by opening of BP & FP angle cocks on either end after creation of full MR pressure.

3.4.5 Apart from the shortcomings found during IC0 after POH, the shed should also plan the works and materials which were not carried by POH Shop.

3.4.6 POH Shop KPA may be advised to send exception report of noncompliance of must change items, MS, TC, SMI's etc. after POH of locomotive.

4. HOLDING/POPULATION:

SN	Type of Locos	Tri-plate Brake system			CLW rack type arrangement	Distributed arrangement	Total
		FTRTIL	SIL	KBIL			
1	WAG7	19	17	03	15	75	129
2	WAP4	16	29	06	26	00	77
3	WAM4	00	00	00	00	05	5
Holding							211

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5. PERFORMANCE: Failure cases

Item name	2016-17			2017-18			2018-19(Upto June)		
	Av. Pop	Failure	FRPCPY	Av. Pop	Failure	FRPCPY	Av. Pop	Failure	FRPCPY
Pn Valve	195	17	8.7%	188	23	12.2%	211	3	5.6%
Pn pipe line	195	34	17.4%	188	20	10.6%	211	2	3.7%
Others	195	03	1.5%	188	04	2.1%	211	00	00

6. Compliance of SMI,MS&TC issued by RDSO:

6.1 Reliability Action Plan to be implemented as per TC-142.

6.2 Air Drier test bench with dew point measurement as per TC 0139 should be implemented.

6.3 A9 Pneumatic valve failures cases on account of entry of coal /dust particles are noticed. MS-0463 should be implemented to arrest this problem.

6.4 In the cases of CRO it is noticed that BP extension pipe get damaged. BP extension pipe is inherent weak member and get damage during CRO, thus MS-0418 is to be implemented to remove BP extension pipe and relocate BP angle cock.

6.5 NRV testing as per SMI -184 should be implemented.

6.6 AFMV is to be calibrated and tested as per MP Directorate Report no.1412/1988

7. TEST FACILITIES:

7.1 Test facilities of most of the pneumatic valves A9, SA9, C2 Relay valve, C3W valve, Rotex magnet valve, Feed valve, MU2B, F1 selector and Add C2 relay valve is available in section.

7.2 Moreover it is required to develop test benches for AFMV, NRV and Air dryer.

8. AVAILABILITY OF SPARES:

8.1 The procurement of rubber kits of Pn valves is made through store depot as these are stock items. The Present availability position is indicated in table 1.

8.2 For the above, it is noticed that there is a crisis of rubber kits of Pn valve like A9, SA9, C2 Relay valve, F1 selector and auto drain valve, so the attention is to be given for procurement of rubber kits for these valves on priority and increase the annual requirement as per holding of locos.

Details of Spares	AAC	Supply in last two years		Short fall
		2016-17	2017-18	
A9(25980336)	25	Nil	Nil	50 set
SA9(25980348)	15	9set	Nil	21 set
C2 Relay Valve (25980361)	30	Nil	Nil	60 set
Add C2 Relay valve	No PL	No PL	No PL	-
Feed Valve D24B (25980373)	10	Not used	Not used	-
C3W (25980476)	10	Nil	Nil	20 set
Auto Drain Valve (25187533)	20	41set	Nil	-01 set
Rubber kit for A9 valve (25257754)	500	572	Nil	428 set
Rubber kit for SA9 Valve(25257766)	500	100 set by DTR	549 set	351 set
Rubber kit for C2 Relay valve (25257687)	400	Nil	100 set	700 set
Rubber kit for C3W (25986016)	160	Nil	232 set	88 set

Table - 1