

Fax : (0522)-2452581
Telephone: (0522)-2465737
Telegram : 'RAILMANAK', Lucknow
E-mail : dirpnloco@gmail.com



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011
Government of India - Ministry of Railways
Research, Designs & Standards Organization,
LUCKNOW - 226011

No. EL/3.2.19/3-Phase /CCB

Date 12.06.2017

Chief Electrical Engineer,

1. Central Railway, Mumbai CST- 400 001.
2. Eastern Railway, Fairlie Place, Calcutta- 700 001
3. Northern Railway, Baroda House, New Delhi-110 001
4. Southern Railway, Park Town, Chennai-600 003
5. South Central Railway, Rail Nilayam, Secunderabad-500 071
6. South Eastern Railway, Garden Reach, Calcutta-700 043
7. Western Railway, Churchgate, Mumbai-400 020
8. East Cost Railway, Chandrashekharapur, Bhubaneswar- 751 016.
9. North Central Railway, Hasting Road, Allahabad-211 001.
10. East Central Railway, Hazipur-844101 (Bihar)
11. West Central Railway, Jabalpur-482001
12. South East Central Railway, Bilaspur-495004
13. Chittaranjan Locomotive works, Chittaranjan-713 331

Sub: Minutes of Meeting to discuss reliability related issues of Computer Controlled Brake system (CCB) of M/S. KBIL held at RDSO Lucknow, on date 05.06.2017

A meeting was held with representatives of M/s. Knorr-Bremse India Pvt. Ltd. to review the reliability issues of CCB and chalk out action plan to resolve such failure issues. In this regard please find enclosed minutes of meeting.

(Signature)
12/6/2017
(Aseem Kumar)

For Director General/Elect

Encl: MOM (04 pages)

Copy to:

- Secretary (Electrical), Railway Board, Rail Bhawan, New Delhi-110001
(Kind attn.: Shri A. K. Goswami, DEE/RS/RB) for kind information please.
- M/s. Knorr-Bremse India Pvt. Ltd. 51/4 KM Stone, Village & P.O. Bhagola,
Delhi Mathura Road (NH-2), Palwal-121102 (HARYANA)
(Kind Attn: Sh. Avinash Kumar, Chief Manager)

(Signature)
12/6/2017
(Aseem Kumar)

For Director General/Elect

Encl: MOM (04 pages)

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Minutes of Meeting to discuss reliability related issues of Computer Controlled Brake system (CCB) of M/S. KBIL held at RDSO Lucknow, on date 05.06.2017

S.N	Name (S/Shri)	Designation	S.N	Name (S/Shri)	Designation
RDSO			M/s KBIL		
01	O.P. Kesari	EDSE (Co-ord)	01	Avinash Kumar	Chief Mgr
02	Aseem Kumar	DSE	02	C.M. Sawarkar	Sr Mgr
03	Amar Jeet Singh	SSE/Elect	03	Yogesh Kumar	Divl. Mgr
04	V K Gupta	JE/Elect			
05	Mahendra Pal	JE/Elect			

The discussion and decisions are appended below.

PART A. Reliability issues as per RDSO's MOM dated 24.03.2017			
SN	Description of items	Compliance given by M/s KBIL	Discussion held at RDSO
1	Brake Application & Release Timings in CCB Brake System		
1.1	<p>Eastern Railways reported that there is delay in brake application time through SA-9 in improved version of CCB system of 3-phase locomotives resulting in unsafe condition.</p> <p>M/s. KBIL stated that the modification in software has been initiated which may take about 07 months time for implementation for reducing the application time to 8 seconds from the current time of about 10 to 11 seconds. However RDSO stated that this modification needs to be implemented on priority basis within a time frame of 3 to 4 months.</p> <p>Therefore M/s. KBIL were advised to persuade their principals to modify the software as early as possible. If action is not taken timely, Railway may review the use of CCB on Electric locos.</p>	<p>As advised by RDSO, KBI has pursued with NYAB to release the software by July'17. Further looking in to urgency we have got the software release schedule proponed. Now we are expecting the same for trials by end of June'17 (we have committed this at CLW meeting also on 25.05.2017).</p> <p>At present 78 nos. of WAP7 locos are in service with CCB & we expect to complete this new software updating on all the WAP-7 locos (as only these Locos now have higher BC volume due to adoption of conventional brake cylinders instead of TBUs) by mid of July'17 based on availability of the locos in the shed for testing & implementation.</p> <p>Afterwards all the WAG9 locos will be updated with new software.</p>	<p>As explained by firm during the meeting difference of timing in WAP-7 loco is because of additional volume of brake cylinders with length of stroke (16mm as compared to 12mm)</p> <p>Trial with new software should be conducted by 30.06.17 in one loco of class WAP-7 & WAG-9 each. On the basis of successful trial & field performance from concerning shed, all other loco's software are to be updated by 15.07.17.</p>
1.2	<p>A trial has been done by M/s. KBIL at ELS/CNB on Loco No. 31720 WAG-9 with and without a choke of size 5.0 mm for reduction of SA-9 brake application time where it is found that time of brake application is reduced by 1 to 2 seconds by removal of 5 mm choke. A joint check of</p>	<p>At present BC choke has been removed in 9 locos (5 at ELS/HWH & 4 at ELS/TKD) & those are working without any problem. If RDSO advise, we can remove the choke in balance locos also. No adverse effect has been found. However RDSO to advise for</p>	<p>Action on this issue is to be withhold since the software is ready and will be updated soon. Also feedback from ELS/TKD is awaited.</p>

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	above and impact of removal of choke in SA-9 application time is needed to be carried out at ELS/CNB & ELS/HWH with RDSO, Railways and M/s. KBIL, within a week's time so that it may be adopted in existing locomotives till modification in the software is completed.	further removal of chokes in balance WAP-7 locomotive till the time software gets modified and implemented.	
2.0	Application time of A-9 Auto Brake Application		
2.1	Trails should also be conducted in ELS/CNB & ELS/HWH to measure the application brake time with A-9 for each make CCB system of M/s. KBIL & E-70 of M/s. FTRTIL brake system. These should be done to compare efficacy of brake system with A-9 for each make as per specification and Technical Circular No. RDSO/2012/EL/TC/0113, Rev'0' dated 29.03.2012.	After joint testing at ELS/HWH with shed & RDSO and found satisfactory. No further action required.	Application time with A-9 is as per Technical Circular No. RDSO/2012/EL/TC/0113, Rev'0' dated 29.03.2012
3.0	Provision of BC Pressure Reduction with A-9.		
3.1	M/s. KBIL was requested for implementation of decision taken during the meeting convened for addressing this issue in Dec. 2016. RDSO expressed serious concern regarding frequent changing of the target date by M/s. KBIL on mutually agreed decisions. M/s. KBIL was advised to complete the software modification by 15 th Aug. 2017.	KBI has already placed an order for software modification on NYAB & it is expected after getting the Independent BC (SA9) timing software & expecting as per committed date of 15 th Aug'17.	M/s. KBIL was advised to complete the software modification by 15 th Aug. 2017 after software modification as discussed in item 1.
4.0	Validation CCB as per new Specification		
4.1	M/s. KBIL was advised to expedite prototype testing of Computer Controlled Brake System as per New Specification No. RDSO/EL/SPEC/0126 Rev.'0' dated Feb. 2017. M/s. KBIL stated that they would intimate the time schedule of prototype testing within one month's time.	KBI has already discussed with NYAB for this and they are making Technical Proposal and timeline. We are expecting to get this offer by June 2 nd week and system would be ready for testing around March' 2018 with capability & provision within software to interface to DPWCS and safety systems like TPWS/TCAS through RS 485. However without having actual interfacing equipment in place these can be tested only on Locomotives only once equipment is installed and interfacing is done.	Firm's response is awaited.
5.0	Bursting of 'O' ring in feed valve circuit at ELS/HWH		
5.1	Sh. Anirban Bandopadhyaya	KBI has made Joint note with shed	ZRs are requested to

	representative of M/s. KBIL attended the fault in ELS/HWH without making the joint note. M/s. KBIL was advised to ensure preparation of Joint note clearly indicating the probable cause of failure and remedial action to be taken to prevent reoccurrence of such defects in future for each and every failure reported.	and the same is enclosed. During failure analysis of feed valve it has been observed that a lot of moisture & rust particles found in the valve which made regulating valve portion defective. After replacing the same it was ok. We have found the same problem in other failed valves also. In view of the above, if RDSO agrees, KB would recommend to check & clean feed valve during AOH/TOH.	implement checking and cleaning of feed valve during AOH/TOH and provide feedback.
6.0	Provision of wire mesh filter in BP pneumatic circuit		
6.1	The wire mesh filter has already been provided in 05 locomotives and their performance is generally found satisfactory. Further M/s. KBIL is advised to study the implications of wire mesh filter on train operation safety in consultation with their principals and submit its report by 30 th Apr. 2017	<p>KBI had provided 10 nos. Strainer in the PVEM circuit on Locomotives as per RDSO instruction. Further Strainers fitted on 15 Locos in ELS/TKD as per the letter received from shed.</p> <p>Matter was discussed with CLW also & CLW has requested RDSO to get the feedback from sheds & advise accordingly for provision of the same in other locomotives also. As per principal designer of CCB M/s NYAB, filter is not recommended in BP emergency pneumatic circuit.</p>	<p>KBIL has fitted mesh filter at input port of PVEM valve provided with BPCP in 10 nos. (ELS/TATA-05, ELS/BIA-03 & ELS/TKD-02) Locomotives as per RDSO instruction.</p> <p>Further the firm did same provision in 15 locos at ELS/TKD on their advice. Firm apprised that ELS/GMO has also provided this mesh in 29 of their locos by themselves.</p> <p>Performance of this provision has to be collected from concerning sheds. Based on performance this provision will be implemented for all CCB fitted locomotives. Concern ZRs may kindly provide feedback..</p>
6.2	Further trial of dust collectors in BP circuit is required to ascertain their efficacy in arresting the ingress of dust/ dirt particles in BP circuit. For this M/s. KBIL was advised to provide the dirt collectors in 05 locos each in ELS/TATA & ELS/GMO. This should be completed in two months' time so that its extensive trials can be undertaken.	KBIL will be ready with Dirt Collectors by 15 th June'17 & request RDSO to advise shed or CLW for fitment on Locomotives in the BP Branch Line connecting CCB panel to main brake pipe since KBI do not have pipe bending facility. Also due to variation in piping from loco to loco, it is required to bend the pipe on the spot while fitment is being carried out.	Two locos have been provided in ELS/TATA but ELS/TATA has suggested to review this issue of providing any filter & dirt collector in between BP circuit, so use of Dirt Collectors in branch pipeline may be carried by firm. Shed have to assist firm in changes to be done in piping.
7.0	Failure of Unloader Valve & Check Valve		
7.1	RDSO shall collect the performance of modified unloader and check valve	The reason for Unloader leakage problem was due to damage of	Firm apprised that KBIL's ULV has improved stem rubber

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	from zonal Railways and if performance is found satisfactory then RDSO will issue necessary instructions for implementation of the modification.	<p>seal.</p> <p>Earlier, KBI was providing Unloader outsourced from a supplier & based on the problems reported, KBI had advised supplier to improve the quality of the same. However, problem still did not get solved completely and hence KBI has started manufacturing Unloader Valve of our own which is tested and found satisfactory.</p> <p>KBI will provide the same to CLW to distribute to various sheds to fit in all the Locomotives as per discussion at CLW. At present same has been provided on loco no 31548 /ELS/TKD and is working satisfactorily.</p> <p>For check valve the failure reported is a single case & we are further monitoring.</p>	<p>seal, provided spring, mating seat edge and increased height of the cap hex for proper grip.</p> <p>After successful trial of modified ULV in loco no 31548 ELS/TKD, Modified ULVs should be provided by KBIL to CLW as per following schedules for distribution to various sheds.</p> <table><tr><td>Up to June'17</td><td>100 nos.</td></tr><tr><td>Up to July'17</td><td>250 nos</td></tr><tr><td>Aug'17</td><td>Rest Quantity</td></tr></table> <p>Documents and drawing related to modified ULV shall be submitted by KBIL for scrutiny and approval by RDSO</p>	Up to June'17	100 nos.	Up to July'17	250 nos	Aug'17	Rest Quantity
Up to June'17	100 nos.								
Up to July'17	250 nos								
Aug'17	Rest Quantity								
7.2	Modified valves shall be supplied by M/s. KBIL to railways on free of cost (FOC) basis. M/s. KBIL should also provide modified valves for new locomotives to CLW with the scope of supply of brake system. M/s. KBIL stated that they have cut-in the unloader valve for new locomotives in June 2016.	KBI will provide modified Unloaders in New supplies for CLW from July'17 & as advised by CLW and for field, replacement will be arranged as below: 100-150 nos. in June'17 & 250 nos. in July'17 to CLW for distribution to sheds and balance quantity in subsequent months.							
8.0	Moisture draining Arrangement in Pantograph reservoir of CCB-2 System								
8.1	M/s. KBIL has modified drain arrangement in Pantograph reservoir by providing additional drain cock at test point in the panel for draining out accumulated moisture in Loco No. 30409 at ELS/RPM on 22.06.16.As this arrangement has been found satisfactory, it may be implemented on regular basis.	KBI has supplied a total of 71 Nos. of moisture drain arrangements to sheds. Out of that, on 51 locos the arrangement has been fitted. 50 Nos. more under dispatch from KBI to various sheds. Further, KBIL will supply balance quantity by end of Sep'17. In CLW it is already implemented since Apr'2017	ZR's may kindly provide feedback of this modified arrangement.						

