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No. EL/3.2.172 **Date: As signed**

Modification Sheet No. RDSO/2022/EL/MS/0XXX Rev '0'.

Title: Modification Sheet for Traction motor Dropping Detection System (TMDDS) in Conventional Locomotives equipped with Hitachi HS 15250A Traction motors.

1. **Object:**
Modification Sheet for development of Traction motor Dropping Detection System (TMDDS) in Conventional Locomotives equipped with Hitachi HS 15250A Traction motors.

2. **Existing Arrangement:**

2.1 **Background** :

2.1.1 On 13.01.2022, an accident occurred near Mainaguri in Jalpaiguri Division of West Bengal of Tr. No. 15633 (Bikaner-Guwahati) exp. Subsequently Railway board issued instruction to develop a system to detect electrically which can send alarm to driving cab and ALP / LP can immediately stop the train vide letter no 2020/Elect.(TRS)/113/Misc. Safety, dtd:- 15-03-2022.

2.1.2 SCR & SER had submitted the detailed scheme for TMDDS developed by ELS/BZA, ELS/KZK & ELS SRC for examination and further necessary guidelines. SCR & SER had also report that these schemes have been provided in one WAP-4 loco of respective sheds.

2.1.3 These schemes have been examined and Scheme for TMDDS of ELS/BZA is found more appropriate. RDSO has advised some suggestions to ELS/BZA. Clarification of effectiveness of TMDDS has submitted by ELS/BZA.

3. **Modified Arrangement:**

3.1 **How it Works**:

As there is no indication for loco crew in the conventional locomotive regarding falling of TM online, ELS/BZA has taken initiation and developed a Traction Motor Dropping Detection System by which loco crew are alerted through signalling lamp (LSTM) and buzzer sound in CAB followed by **DJ tripping with**

emergency brake application automatically by dropping of **BP to zero** and an event will be displayed in MPCS display that "DJ tripped via BPEMS".

3.2 **Scheme** : For provision of TMDDS, the following modifications to be carried out.

a. Fabrication of TM safety lug adapter:

Two no's of 5mm thickness plates to be cut in the shape of safety lug and both are to be joined by welding on top side duly maintaining the gap of TM safety lug thickness **as shown in Fig-1**. Two flats of 150 mm and 70 mm length with 5 mm thickness are to be welded in 'L' shape. This 'L' flat to be welded on one side of the adapter at suitable location to operate hotline foot switch. This arrangement is to be fixed on safety lug by providing M-16 bolt, Flat washer and stainless steel locking nut **as shown in Fig-2**.

Since the adapter is fabricated in the shape of TM safety lug and joined by welding on top portion there is no scope for lateral movement of adapter on run which will avoids the malfunctioning of foot switch and also the adapter is seated on top of the safety lug, avoids dropping on run.

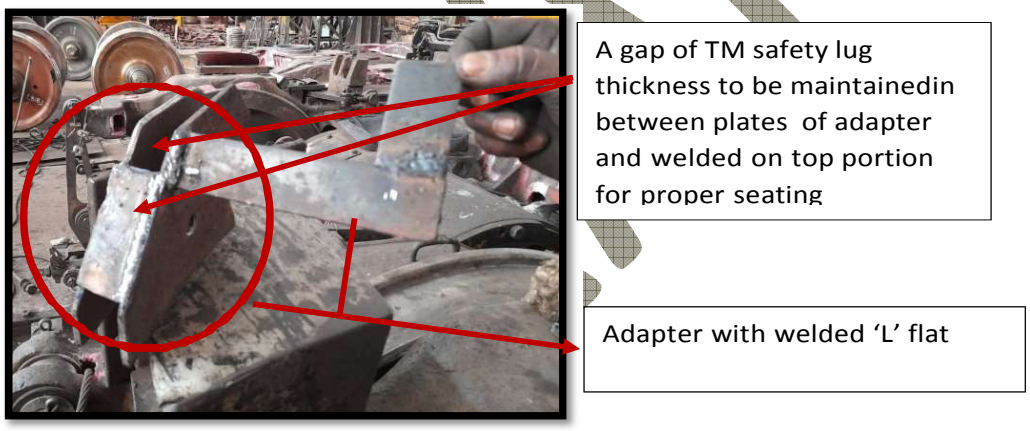

Fig-1

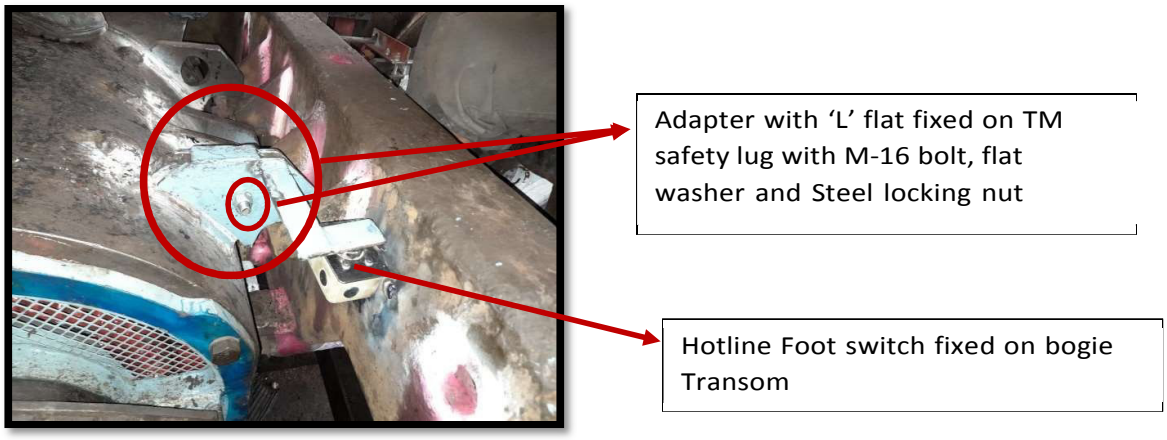

Fig-2

b. Base plate for fixing of Foot switch to be welded on bogie transom near TM safety lug **as shown in Fig-2**.

c. SB terminal to be welded in each bogie frame corner to extend the wiring to body and BD terminal to be welded on loco body **as shown in Fig-3 & 4**.

d. 2.5 Sq.mm 1 core cable to be laid from each foot switch on bogie frame upto the terminal SB and extend upto BD in loco body.

e. All the foot switches of TM 1 to 6 interlock wiring should be connected in parallel.

f. Kit-kat fuse of 2 Amps to be provided in TB panel to control the wiring.

g. LSTM LED indication lamp is to be provided on driver's desk in each cab.

h. Two pin coupler arranged between bogie and body connections to disconnect whenever loco is lifted.

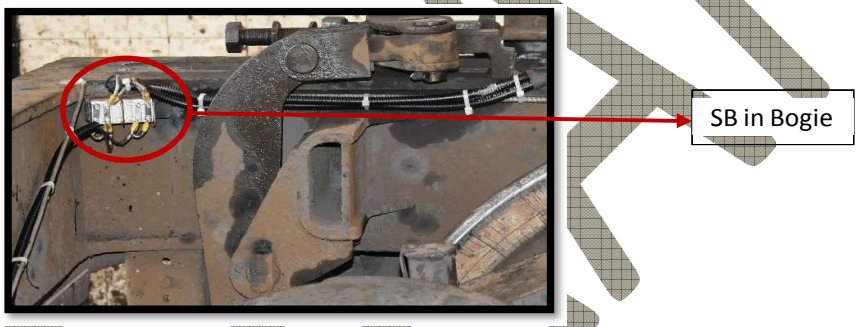

Fig-3

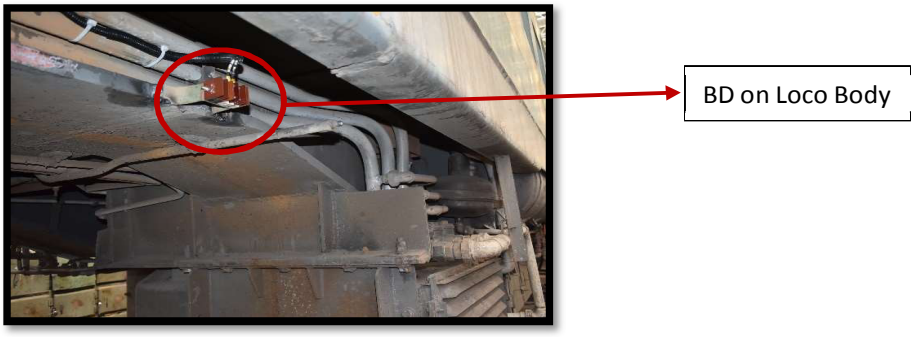

Fig-4

3.3 **Working:**

Whenever TM nose lug cracked or sandwich mounting pad is fallen, TM falls from the normal position & rest on safety lugs. In this process of resting, the 'L' angular welded on TM safety lug adapter activates the foot switch. The interlock of foot switch allows 110 V supply to QEMS relay through 067 TM and energises the relay. On energisation of QEMS relay, LP gets the similar actions of BPEMS, (when pressed) along with glowing of LSTM on drivers cab. Immediately, LP has to ensure the condition of the TM's before working further..

3.4 **Circuit Diagram:** Circuit diagram is enclosed herewith.

3.5 **Resetting:**

If no abnormality found or to clear the block section, LP has to remove the CCTM fuse for resetting and work further which cautious speed duly mentioning in the loco logbook.

4. **Work to carried out:**

This modification shall be done as per above mentioned scheme.

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5. **Application to Class of Locomotives:**

All existing WAP-4 locomotives equipped with Hitachi Traction motors type HS15250A.

6. **Material Required :**

a) 2.5 Sq. mm cable- 80 mtrs. Approx.
b) Hotline foot switches – 6 numbers.
c) 5 mm thickness base plate for fixing of foot switches in bogie – 6 numbers.
d) TM safety lug adapter with L flat – 6 numbers.
e) Indication lamp – 2 numbers for each cab.
f) Kit-kat fuse – 1 number.
g) Two pin coupler – 1 set (Male & Female)

7. **Material rendered surplus:**

Nil.

8. **Periodicity:**

. All sheds will carry out this modification when loco in lifted condition only.

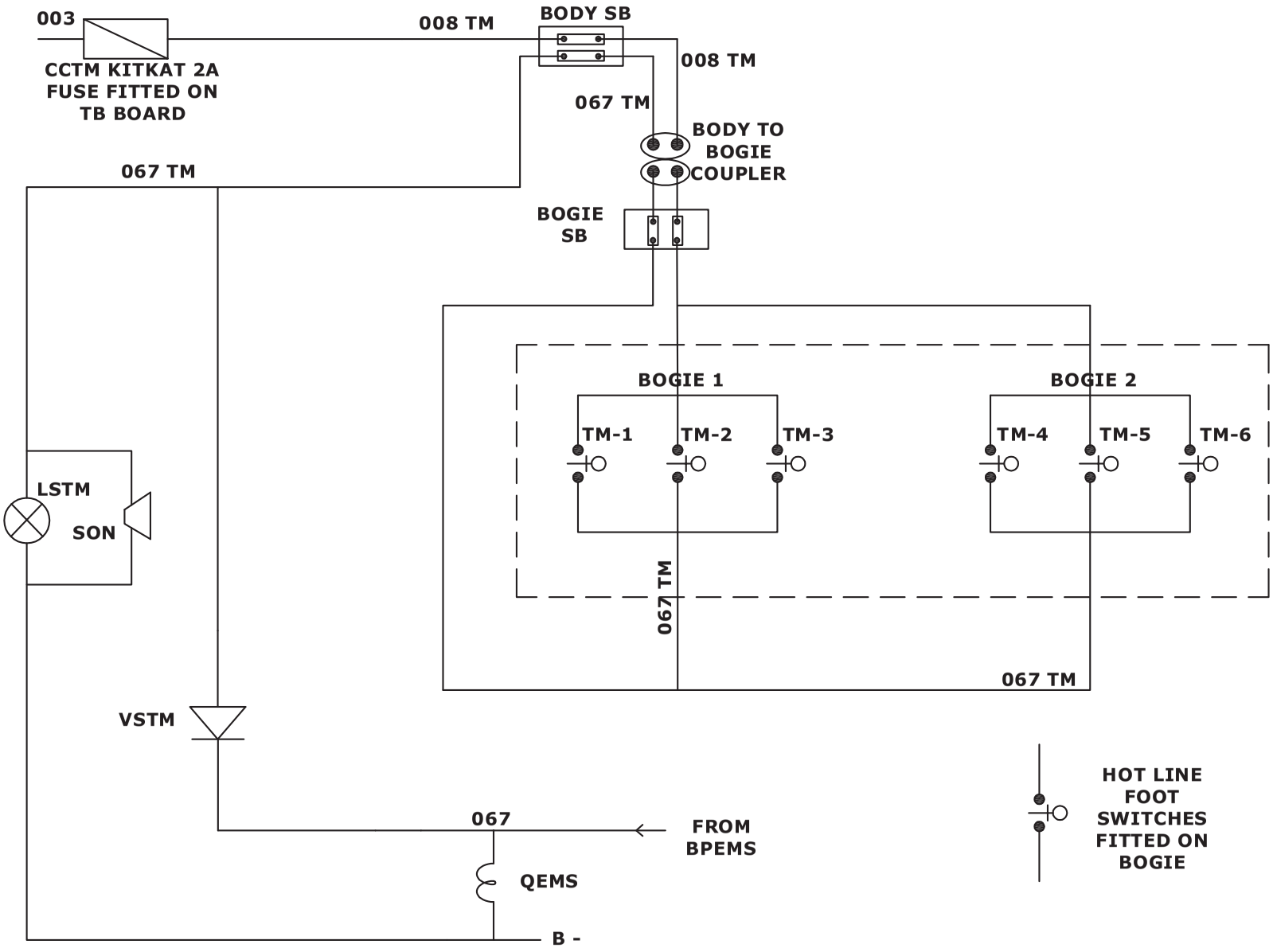
9. **Distribution:**

As per mailing list.

(Anurag Agarwal)
for Director General/Electrical

Enclo: Electrical Circuit diagram of Scheme

TRACTION MOTOR DROPPING DETECTION SYSTEM DEVELOPED BY ELS/BZA



ELCTRICAL CIRCUIT