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सत्यमेव जयते

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/4.2.15

Dated 28.12.2011

Chief Electrical Engineer,

1. Central Railway, Mumbai CST-400 001.
2. Northern Railway, Baroda House , New Delhi-110 001.
3. North Central Railway, Allahabad- 211 001.
4. Eastern Railway, Fairlie Place, Kolkata -700 001.
5. East Central Railway, Hazipur-844 101.
6. East Coast Railway, Chandrashekharpur, Bhubaneshwar-751 016.
7. Southern Railway, Park Town, Chennai-600 003.
8. South Central Railway, Secunderabad-500 371.
9. South Eastern Railway, Garden Reach, Kolkata -700 043.
10. South East Central Railway, Bilaspur-495004
11. Western Railway, Church gate , Mumbai-400 020.
12. West Central Railway, Jabalpur-482 001.
13. Chittranjan Locomotive Works, Chittranjan-110 001

MODIFICATION SHEET NO. RDSO/2011/EL/MS/0404 Rev '0'
Dated: 28.12.2011

1. **Title:**

   Modification in electric locomotive control circuit fitted with microprocessor based control system (MPCS) for individual isolation of hard/soft QDs during operation of HMCS programme switch.

2. **Object:**

   It has been observed that in the present control circuit of MPCS both QDs get bypassed in case of isolation of any Traction Motor by HMCS. The input sensing of individual HMCS-1 & 2 is not possible by MPCS in the existing circuit and there is no individual isolation of QD-1 and QD-2. As such in case of isolation of any TM both QDs get bypassed.

3. **Existing Arrangement:**

   (A) For soft QDs:-

   In the existing arrangement there is parallel combination of HMCS-1 & HMCS-2 at input I-62 for wheel slip and series combination of HMCS-1 & HMCS-2 at input I-60 for DBR mode operation as per SKEL-4868.

(B) For hard QDs:-

In the existing arrangement there is parallel combination of HMCS-1 & HMCS-2 at input I-62 along with QD-1 & QD-2 for wheel slip and series combination of HMCS-1 & HMCS-2 at input I-60 for DBR mode operation as per SKEL-4869.

4. **Modified Arrangement:**

In the modified arrangement separate sensing of operation of HMCS-1 and HMCS-2 will be done. Rest of the logic function will be carried out through software. Automatic recognition for soft QD and hard QD by software is to be ensured in modified software.

5. **Work to be carried out:**

(A) For soft QDs:-

Remove parallel combination of HMCS-1 & HMCS-2 from input I-62 in existing circuit as shown in SKEL-4868. Series combination of HMCS-1 & HMCS-2 from input I-60 remains same for DBR mode operation.

HMCS-1 should be connected directly to wire no. 700 and wire no. 153 should be connected to input no. I-62. Similarly HMCS-2 should be connected with wire no. 700 and wire no. 'new' should be connected to input no. I-95 as shown in modified circuit as shown in SKEL-4868.

Change in software logic should be carried out simultaneously.

(B) For Hard QDs:-

Remove parallel combination of HMCS-1 & 2 from input I-62 along with QD-1 & QD-2 in existing circuit as shown in SKEL-4869. Series arrangement of HMCS-1 & 2 from input I-60 remains same for DBR mode operation.

HMCS-1 should be connected directly to wire no. 700 and wire no. 152 along with QD-1 in series with wire no. 153 should be connected to input no. I-62. Similarly HMCS-2 should be connected to wire no. 700 and wire no. 154 along with QD-2 in series with wire no. 'new' should be connected to input no. I-95 in modified circuit as shown in SKEL-4869.

Change in software logic should be carried out simultaneously.

Automatic recognition for soft QD and Hard QD by software: Software should be modified in such a way that MPCS system act on soft QD when ISCU communication is available otherwise act on hard QD

Note: Hard QD should be removed in future from MPCS loco in a time bound manner. Only soft QD should be used.

6. Application to class of locomotive:

All 25 kV AC electric locomotives provided with microprocessor based control and fault diagnostic system (MPCS) per RDSO specification no. ELRS/SPEC/MPC_FDS/0001(Rev '2') Aug 05.

7. Material Required:

Loco control cable 2.5 mm 750 V as required

8. Material Rendered Surplus:

NIL

9. Reference:

The modification has been carried out in one loco no. 22596 for trial purpose and found working alright.

i) Sr DEE/TRS/WAT/ECoR letter no. WAT/TRS/T/MPCS1222 dated 09.05.11
ii) Sr DEE/TRS/Angul/ECoR letter no. ELS/Angul dated 06.07.11

10. Modification Drawings:

SKEL/ 4868 and
SKEL/4869

11. Agency of Implementation:

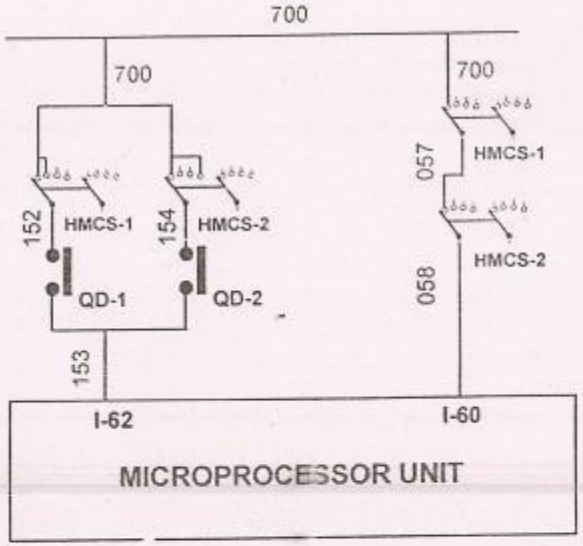
CLW
POH workshops
Electric loco sheds.

28/12

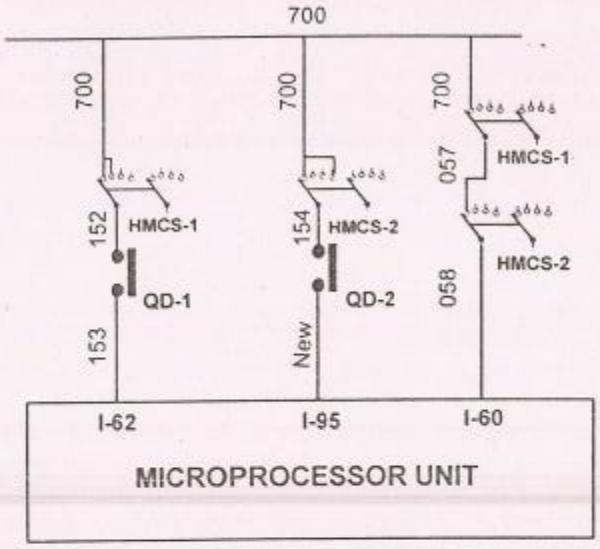
(S. K. Gupta)
for Director General/Elect.

Encl: As above

O/C



Existing Circuit



Modified Circuit

Note:- Logic of Q48 should be achieved through software as per conventional loco logic.

REF.	PART NO.	DESCRIPTION	DETAIL DRG. NO.	NO./LOCO	HALT.	SPEC.
REF.	SMI/0— (Rev '0')		SCALE	APPD. BY	28/12/11 (FOR DG)	

Dt.	28-12-11	Loco control circuit for separate isolation with hard QDs through HMCS.		FIRST ISSUED	
D	N.S			SUPERSEDES	
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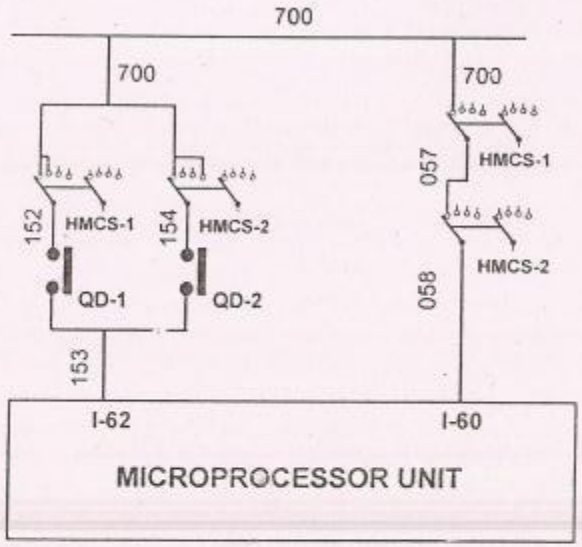
T				SUPEREDED BY	

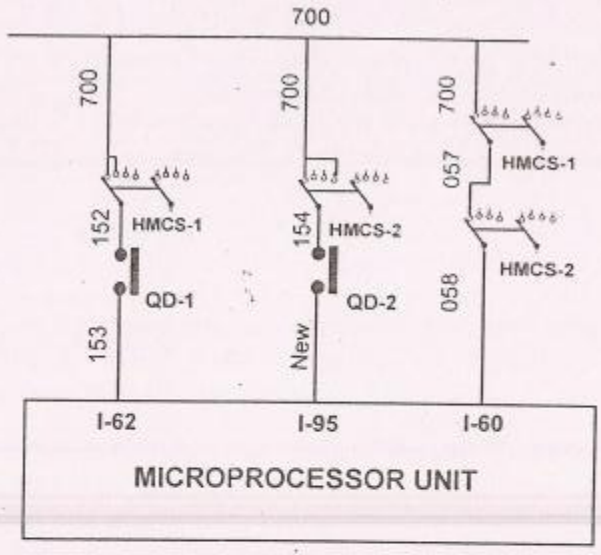
STATUS	ALT.	REF. NO.	DESCRIPTION	APPD. BY	DATE

RDSO. ELECT. DTE.

SKEL-4869



Existing Circuit



Modified Circuit

Note:- Logic of Q48 should be achieved through software as per conventional loco logic.

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REF.	SMI/0— (Rev '0')		SCALE	APPD. BY	28/12/11 (FOR DG)	

Dt.	28-12-11
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STATUS	ALT.	REF. NO.	DESCRIPTION	APPD. BY	DATE

Loco control circuit for separate isolation with hard QDs through HMCS.

RDSO. ELECT. DTE.

SKEL-4869

FIRST ISSUED

SUPERSEDES

SUPEREDED BY