सत्यमेव जयते

भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ – 226011
e-mail : dsetplgroup@gmail.com.

Government of India - Ministry of Railways
Research, Designs & Standards Organization,
LUCKNOW – 226011
Fax: 91 - 0522 – 2452581
Tel: 2465714/ 2450374

No. EL/11.5.5/21 Dated: As signed

Principal Chief Electrical Engineers;

- Central Railway, HQs Office, 2nd floor, Parcel Office Bldg., Mumbai – 400 001.
- East Central Railway, Hajipur (Bihar) – 844 101.
- East Coast Railway, Railway Complex, Bhubaneswar – 751 023.
- Eastern Railway, Fairlie Place, Kolkata – 700 001.
- North Central Railway, Prayagraj – 211 001.
- North Eastern Railway, Gorakhpur –273 001.
- North Western Railway, near Jawahar Circle, Jaipur–302 017.
- Northeast Frontier Railways, Maligaon, Guwahati – 781 011
- Northern Railway, Baroda House, New Delhi – 110 001.
- Southern Railway, Park Town, Chennai – 600 003.
- South Central Railway, HQs Office, Rail Nilayam, Secunderabad – 500 071.
- South Eastern Railway, Garden Reach, Kolkata – 700 043.
- South East Central Railway, Bilaspur – 495 004.
- South Western Railway, Hubli – 580020.
- West Central Railway, HQs Office, Opp. Indira Market, Jabalpur – 482 001.
- Western Railway, Church gate, Mumbai – 400 020.
- Banaras Locomotive Works, Varanasi – 221004.
- Patiala Locomotive Works, Patiala – 147 003.
- Chittaranjan Locomotive Works, Chittaranjan – 713331.

Modification sheet no. RDSO/2018/EL/MS/0475 (Rev.'1)

1. Title:

Modification in the existing CE resetting scheme to reset the control electronics (VCU) in Multiple Unit Locos.

2. Brief History:

2.1 The occurrence of faults, purely transient in nature is being experienced in 3-phase locomotives. These types of transient faults generally causing the VCB off with/without protective action and leading to subsystem isolation with/without Main Power OFF (tripping of VCB). The faults get corrected by resetting the VCU through BL key (Main Electronics off). However, during resetting of the VCU, the BP pressure also drops in the complete train. It takes about 15-20 minutes or more to regain the required BP pressure and resume the normal train working. This incident affects the punctuality of other trains too and in case of freight operation, stalling of the load also takes place.

2.2 Vide RDSO letter no. EL/11.5.5/21 dated 12.12.2018, a modification sheet no. RDSO/2018/EL/MS/0475 (Rev.'0) was issued to reset the control electronics (VCU) independently in all 3-phase locomotives.

2.3 Vide MS-475 (Rev.-0), Crew has been advised to press CE reset switch for 3-4 seconds but Eastern Railway raised the issue that due to improper VCU reset by crew, sometimes few bus stations are not getting hard reset fully causing isolation of one or more sub-systems as well as main power OFF.

2.4 Further, SER raised their concern that 38 WAG9H locomotives, equipped with IGBT converters are homed at ELS/BNDM and these locomotives are required to be offered in Multiple Unit to haul the load in steep up gradient section. By implementing the RDSO MS-475 (Rev.-0), the resetting of VCU of trailing locomotive is not possible from the leading loco i.e. to reset the VCU in trailing locomotive, Loco Pilot has to stop the train, get down from the leading locomotive and then resetting of VCU could be done in trailing locomotive. This process of resetting VCU will take about 10 minutes and therefore stalling of the load on up gradient may take place during the start.

2.5 In case of loco trouble experienced on the bridges without provision of pathway, it is not possible to reset the VCU of trailing loco due to non-availability of path to go to the trailing loco. Loco No. 31848 in MU with 31756 of ELS/BNDM has failed on 15.06.2018 on bridge without provision of pathway between MOH and DMA in Adra division of SE Railway.

2.6 In this regard, vide RDSO letter no. EL/11.5.5/21 dated 26.04.2023, a draft modification sheet no. RDSO/2018/EL/MS/0475 (Rev.'1) was issued to hard reset all Bus Stations of the control electronics (VCU) independently in all 3-phase locomotives as well as Slave loco from Master loco in MU formation.

2.7 Vide Railway Board letter no. 2022/Elect(TRS)/138/3 dated 25.05.2023, the decision was taken in 40th MSG that introducing additional circuits/ relays/ timers, for issue of improper handling by Crew, is not prudent and may not be accepted. Thus, draft modification sheet no. RDSO/2018/EL/MS/0475 (Rev.'1) has been revised and circulated as draft2 vide RDSO letter no EL/11.5.5/21 dated 04.08.23 for comments/suggestion/feedback for VCU reset scheme in MU locomotives and found it satisfactory in operation based on feedback received from ZRs.

3. Objective:

To reset the control electronics (VCU) of Slave (Trailing) locomotive from the Master (Leading) locomotive in MU operation as well as Single Unit without dropping of BP pressure through brake electronics so that prolonged detention/punctuality loss/stalling of the train could be avoided.

4. Existing arrangement:

As per Modification sheet no. RDSO/2018/EL/MS/0475 (Rev.'0), Crew has been advised to press VCU reset Push Button for 3 to 4 sec. to switch off control electronics in individual locomotive. During resetting of VCU, BP pressure will not drop and parking brake will not be applied.

5. Modified Arrangement:

Modified arrangement to reset the VCU of Slave loco from Master loco is given below:

i. 2 nos. reset push button switches to be provided in SB-1 panel and designated as 'Lead/Master' and 'Trail/Slave' VCU Reset Push Button. On pressing 'Lead/Master' switch, resetting of VCU of the leading/master locomotive will be done and in multiple unit on pressing 'Trail/Slave' switch, resetting of VCU of the trailing/slave loco will be done.

ii. Two numbers OFF time delay (60") relay (MUIR & PBIR), Type- REI7RMMW used in WAG9 class of loco, to be provided in SB-1. 'MUIR' will keep the safety relay control electronics ON (126.6) in energized condition for 60 seconds and provides signal to VCU to bypass Self Hold mode whereas 'PBIR' provides cab activation signal to VCU and keeps the contactor control circuit ON (126) in energized condition for 60 seconds in BL 'OFF' position while 'Trail/Slave' reset push button switch is pressed for resetting of VCU of trailing/slave locomotive.

iii. One no. rotary program switch (ZCAB) to be provided in SB-1 for selection of driving cab during formation of multiple unit i.e. if cab-1 is driving cab then ZCAB to be put on '1' and if cab-2 is driving cab then ZCAB to be put on '2'.

iv. 4 Pins of UIC coupler to be used to transmit the signal from either locomotive. Wire of Pin no. 1 connected with wire of Pin no. 3 and wire no. 2 connected with wire of Pin no. 4 in the UIC mobile coupler.

v. Modified scheme for resetting of Slave locomotive VCU from Master Loco is attached at Annexure-1 (Sheet No. 1-4).

6. Conditions:

6.1 Conditions for resetting of VCU in MU operation are furnished hereunder:

Leading/Master loco —

- VCB should be opened
- Pantograph should be lowered
- BL key should be in Driving (D) position

Trailing/Slave loco —

- VCB should be opened
- Pantograph should be lowered

6.2 Conditions for resetting of VCU in Single Unit operation are furnished hereunder:

- VCB should be opened
- Pantograph should be lowered
- BL key should be in Driving (D) position

➢ ZCAB to be selected as per driving cab number i.e. in case of cab-1 as driving cab then ZCAB to be put on '1' and in case of cab-2 as driving cab then ZCAB to be put on '2'.

7. Procedure for re-setting of VCU:

In case of MU operation:

i. Press 'Trail/Slave' reset push button in leading loco.

ii. During booting of VCU message — 'Communication disturbance' will display on DDU in leading loco. Acknowledge the message until SS19 is isolated.

iii. After 60 seconds, press 'Lead/Master' reset push button switch. Booting of the Master/Leading loco will initiate and after completion of booting SS19 will restore and

Node-504 will appear.

iv. In case of disturbance in any sub-system in trailing loco fault message related to the sub-system will display in the DDU and BPFA will glow. Acknowledge the message; node will come to 504 automatically.

In case of SU operation:

i. Press 'Lead/Master' reset push button in leading loco. Booting of the master loco will initiate and after 60 seconds Node-504 will appear.

ii. In case of disturbance in any sub-system fault message related to the sub-system will display in the DDU and BPFA will glow. Acknowledge the message.

8. Material required:

i. 2 nos. push button switches
ii. 1 no. rotary program switch (ZCAB), similar to used as Vigilance cut out switch.
iii. 2 nos. OFF time delay relay (60") (MUIR & PBIR), Type- REA7RMMW used in WAG9 class of loco.
iv. 1 no. contactor type LC1D09FD for reset relay.
v. 1 no. additional auxiliary contact block Type- LADC22 for Auxiliary Contactor Pantograph (130.1).
vi. 3 nos. VS type diodes used in conventional locomotive.
vii. 1.5 sq. mm cable used in WAG9 class of loco (approx. 200 meter).

9. Material Render Surplus:

Nil.

10. Application to the Class of Locomotives:

Only for WAG 9 class of locomotives where they are used in MU formation for modification in the existing CE resetting scheme to reset the control electronics (VCU) in Multiple Unit Locos.

11. Agency of Implementation:

Production Units, Workshops and Electric loco sheds where WAG9 class type of locomotives are manufactured or maintained in MU formation.

12. Periodicity of Implementation:

Any minor or major schedules.

-sd-

Encl: As above.

For Director General (Elect.)

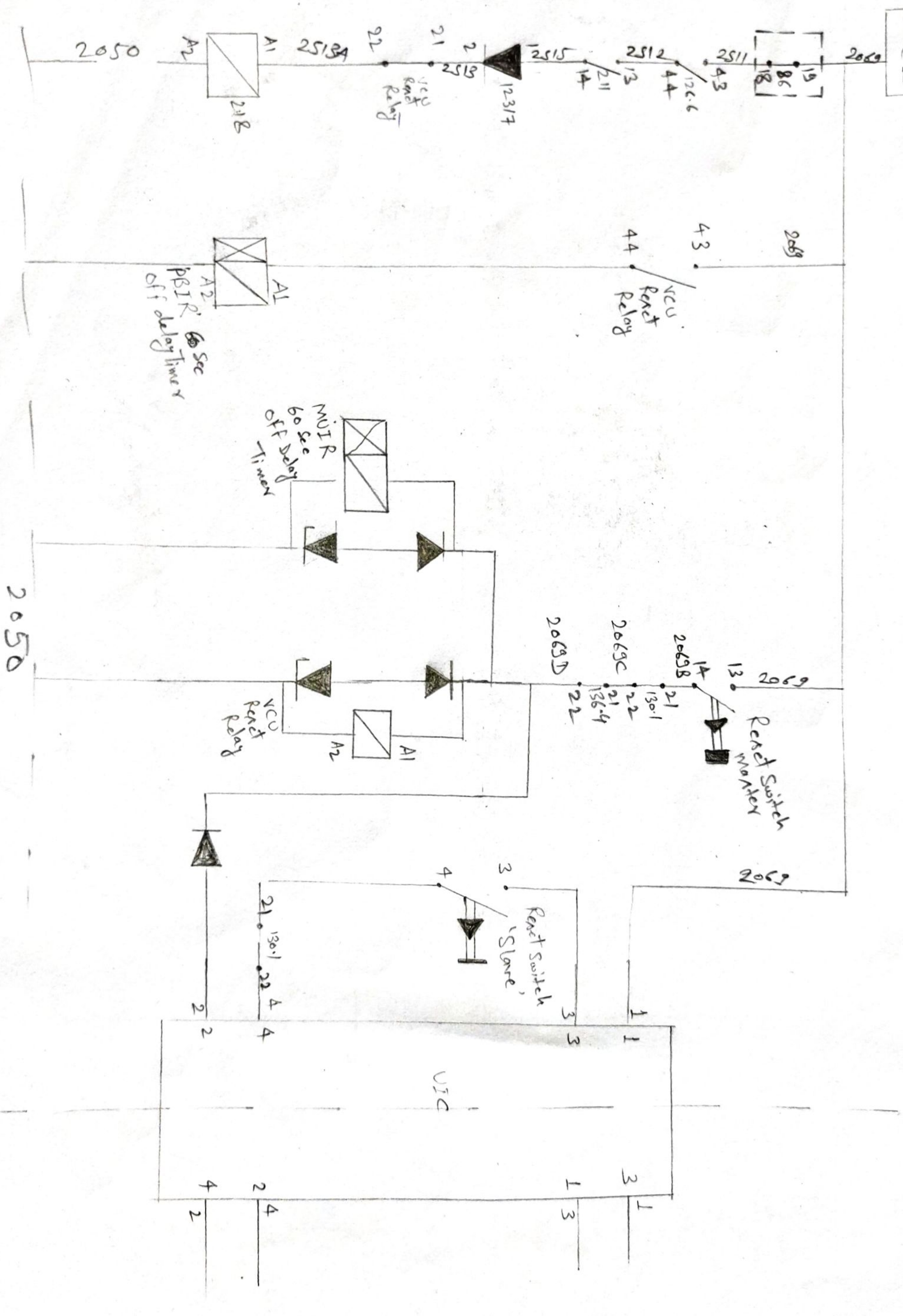
Copy to:

- Secretary (Electrical Engg./RS), Railway Board, Rail Bhawan, New Delhi-110 001.
  (Kind attn.: Shri Kishore Vaibhav, ED EE/RS): For kind information.

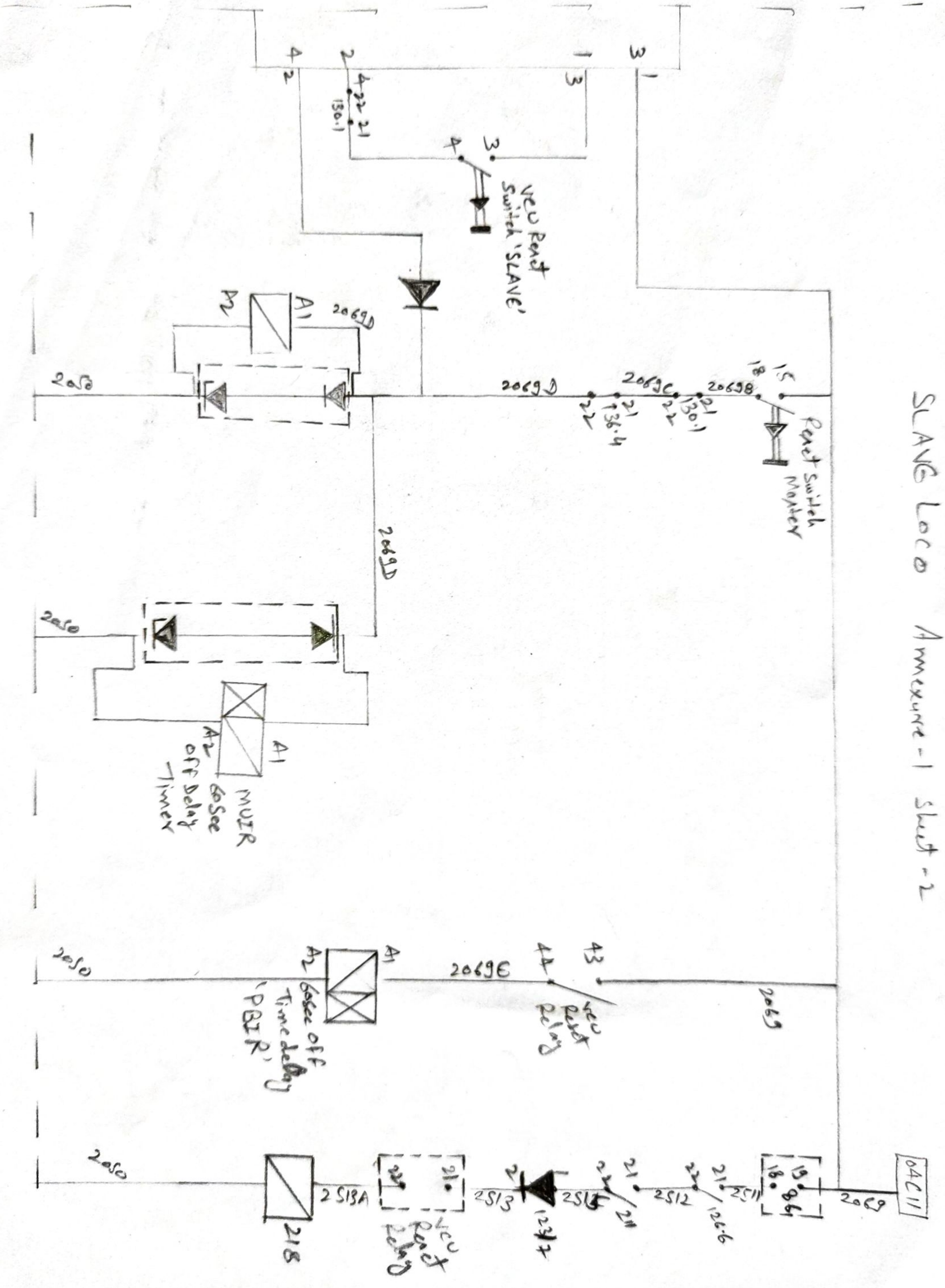
Encl: As above.

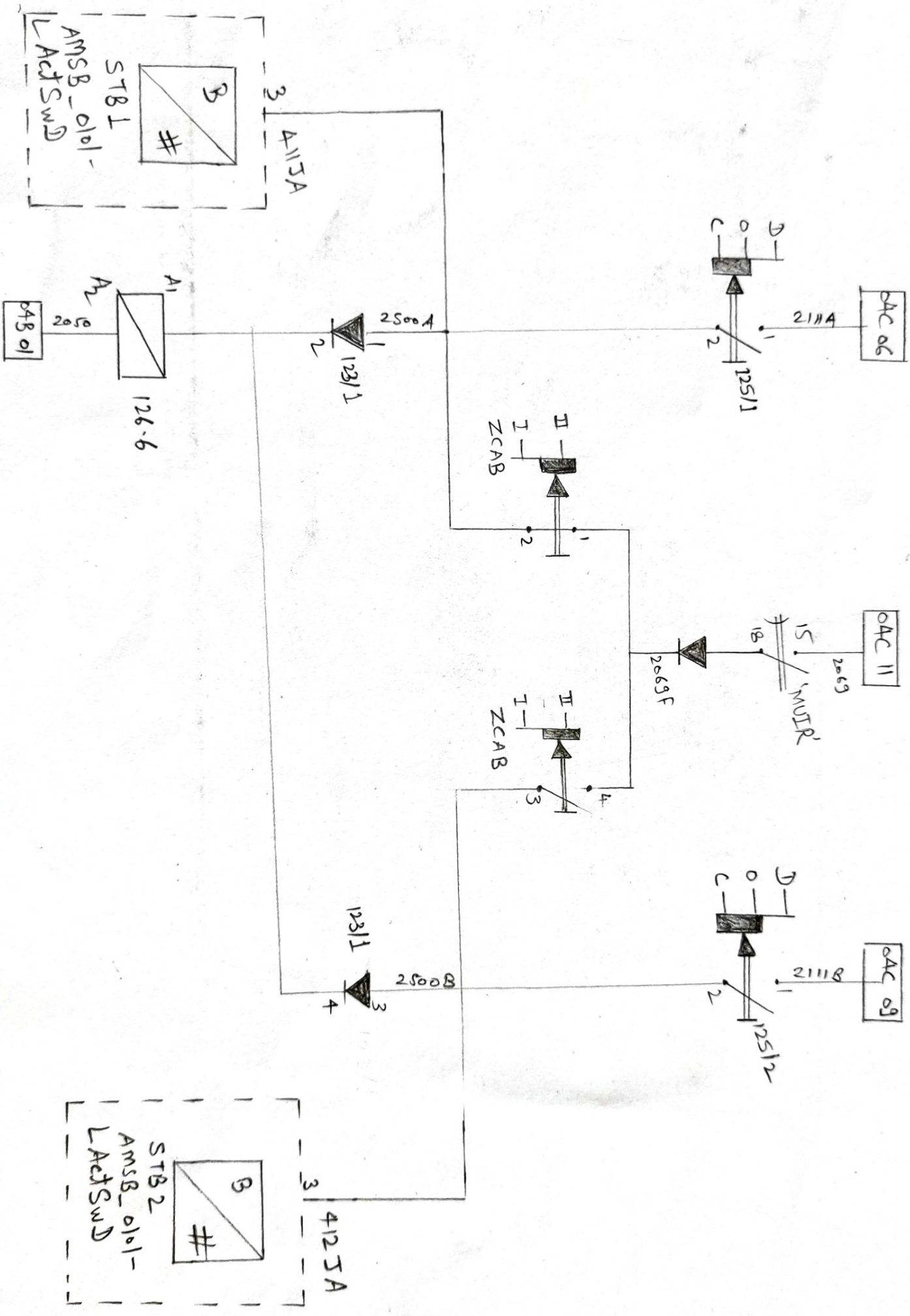
For Director General (Elect.)

Digitally Signed by Amit Kumar Saraf
Date: 26-10-2023 15:34:09
Reason: Approved

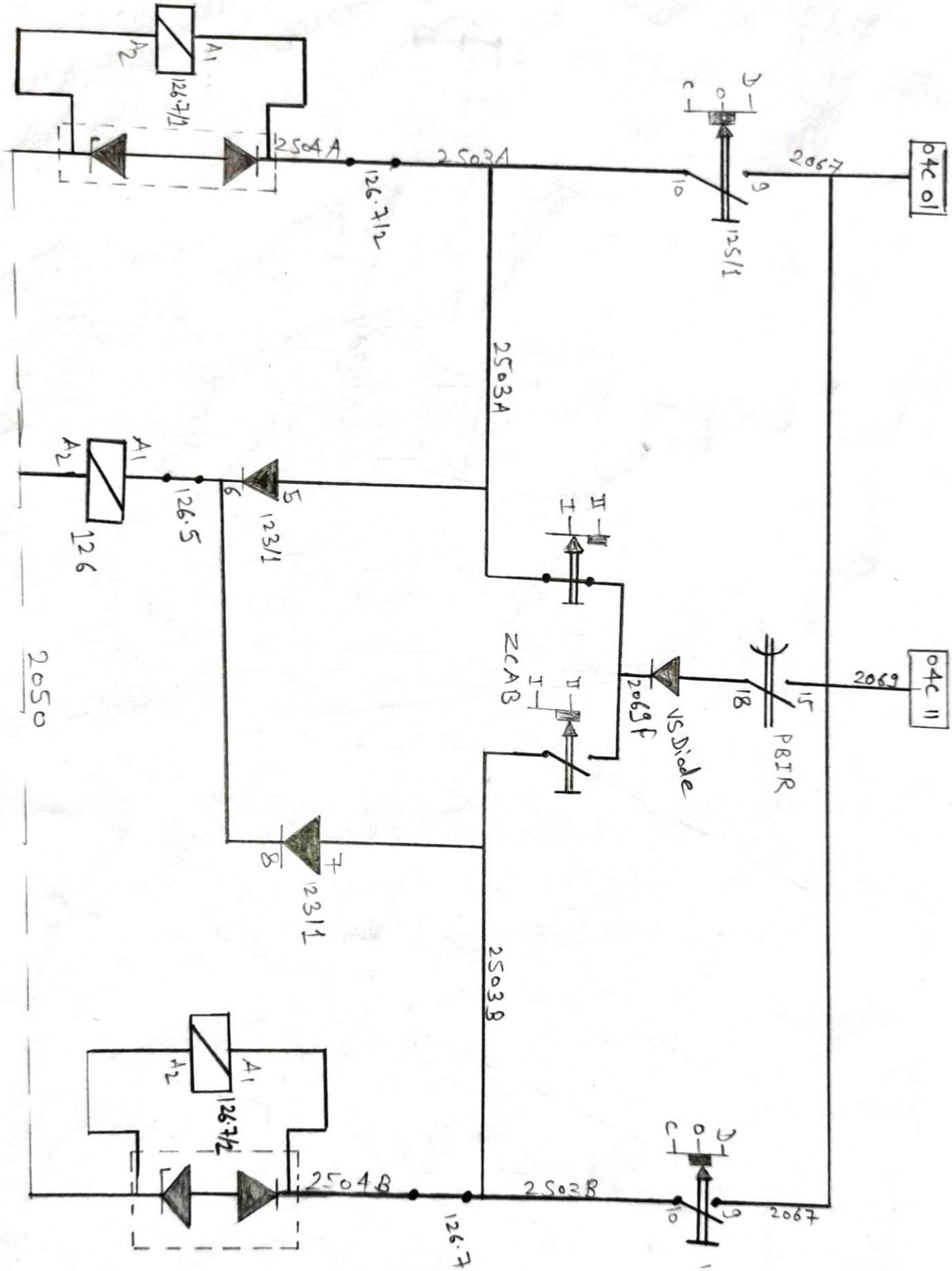


Annexure-1 Sheet-1


SLAVE Loco Annexure-1 Sheet-2
VCU Reset Switch 'SLAVE'
Reset Switch Master
2069D
2069C
2069B
2050
MU1R 60Sec off Delay Timer
2069E
VCU Reset Relay
60Sec off Time delay 'PBIR'
2069
04C11
2S11
2S12
2S13
2S13A
218
VCU Reset Relay



Annexure-I Sheet-3



ANNEXURE-1 (Sheet No-4)