Electric Shop

MDR 159001
ISSUED APRIL 1, 1985

ALASKA RAILROAD

MECHANICAL_DEPARTMENT_REGULATION

MDR NO. 159001

MODIFICATION INSTRUCTION

GP49_LOCOMOTIVE_ENGINE_SPEED_INCREASE IN_DYNAMIC_BRAKING_DURING_COLD_WEATHER

APPROVED: MJSudol
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Done

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I. INTRODUCTION

Experience has shown that during extreme cold weather (-30 F or lower), GP49 locomotives will not maintain adequate main reservor pressure while in dynamic braking. This is due to the throttle circuit design which allows the engine to run at throttle no. 2 during dynamic brake operation. This modification changes the control circuits such that the engine speed in dynamic brake operation will be throttle no. 4 instead of throttle no. 2, when the temperature is +35 degrees F or lower. This increased speed will occur only when the Isolation switch is in the "RUN" position.

II. APPLICATION

This modification applies to ALASKA RAILROAD GP49 locomotives, numbers 2801 thru 2804 (4 units).

III. INSTRUCTIONS FOR INSTALLING MODIFICATION

1. Perform the following equipment modifications in the main electric cabinet. See Appendix A.

    a) Change "ER" relay from 2-pole relay (EMD No. 8363168), to 4~~3~~-pole relay (EMD No. 8357415), and label "ER". Transfer wiring from original 2-pole relay to new 3-pole relay. Save old 2-pole relay for use as CCWR.

    B) Add 2-pole relay (EMD No. 8363168) removed above, and label "CCWR". Mount CCWR relay in open location below existing RVD relay.

    C) Add 1 control rectifier (EMD No. 8421017), "CR64". Mount in open rectifier location below existing CR63 rectifier. See Appendix A.

2. The following wiring modifications are required. Refer to Appendix's A, B and C.

    a) Remove the following wires:

TAG	RUNNING FROM	RUNNING TO
7D3	TB31H-8	*SC2-8
7D6	ERD-2NC	*SC2-8

b) Add the following wires:

TAG	RUNNING FROM	RUNNING TO	WIRE SIZE
7D3	TB31H-8	ERD-2NC	18
7D6	ERD-2NC	BR1-M1	18
7DX	BR1-M2	*SC2-8	18
NA98	ISRA-Z/coil	CCWR-Z/coil	16
CP	CCWR-Y/coil	ER-3NO	18
CS8	ER-3C	SNOW OP. SW.-C	18
*21C	GC-22	CR64-RED	18
21B	CR64-BLK	CCWR-1NO	18
21A	CCWR-1C	BR2-C1	18

* incicates 50 series module connector required.

IV. TESTING

After the installation of the modification is completed, test the locomotive to insure that the new system operates properly.

1. With the engine running, set up the controls for lead operation. Make a maximum independent air brake application.

2. Apply handbrake and chock wheels on the unit, as the independent brakes may release when the controls are placed in dynamic braking.

3. Connect a jumper from ER-3C terminal (CS8 wire) to the WSDR-1C terminal (PA69 wire). NOTE: This will not be necessary if the ambiant air temperature is less than +35 degrees f.

4. Remove trainline jumpers from both ends of unit, if present.

5. Place the ISOLATION SWITCH in the "RUN" position, Insure that ENGINE RUN and CONTROL switches are in the "ON" position.

6. Place the reverser handle in either the forward or reverse position and move the dynamic brake handle to the maximum braking position. The engine speed should increase to throttle 4.

7. Remove the jumper from between CCWR and WSDR relays (test step 3) or if jumper was not needed, remove wire from CCWR-Y/coil (CP wire). Repeat test step 6. Engine speed should increase to throttle 2.

8. If test was succesful, restore locomotive to condition for service.

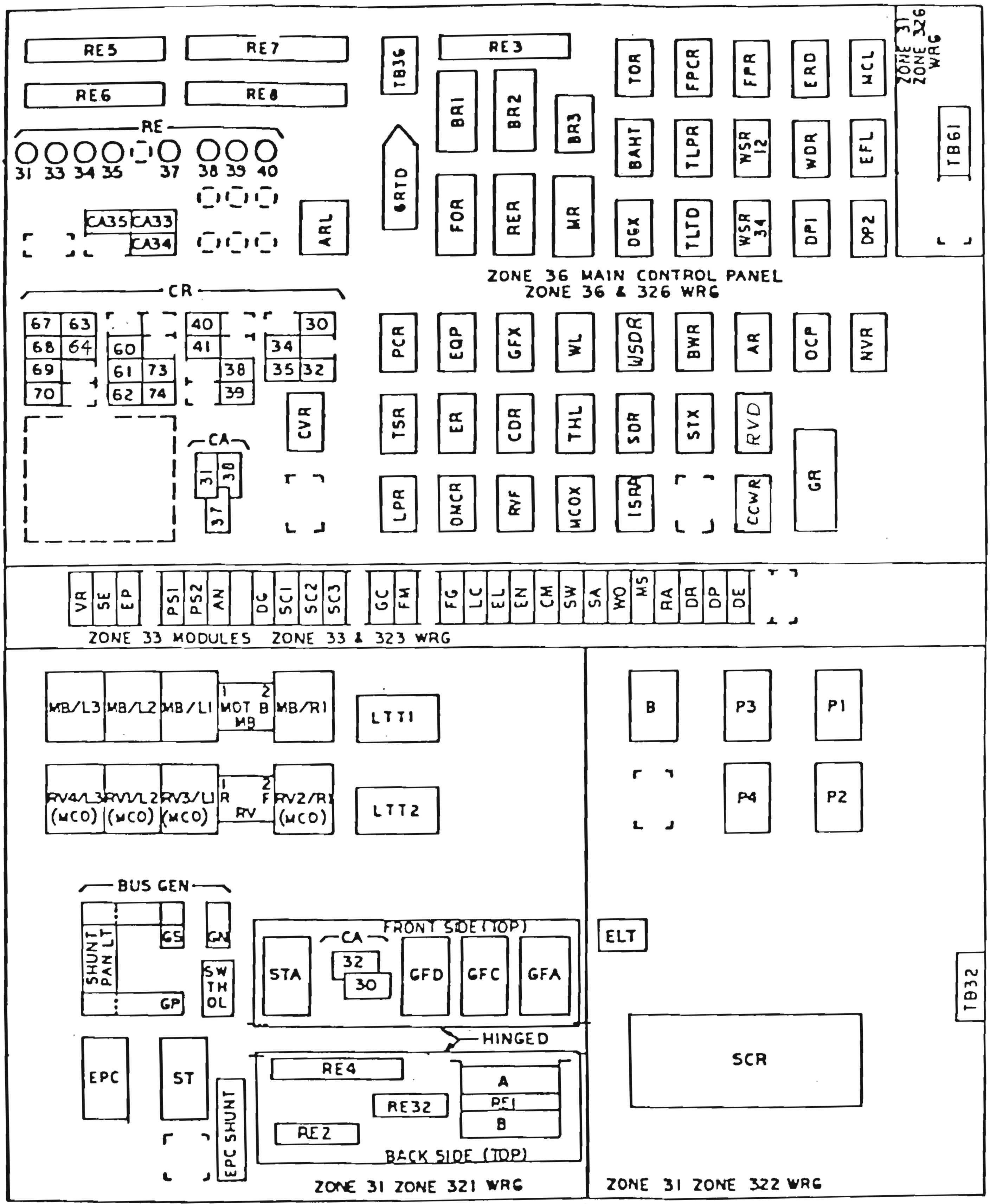
V. PARTS LIST

QTY / LOCOMOTIVE	DISCRIPTION	EMD PART NO.	LABEL
1	Rectifier	8421017	CR64
1	3-pole relay	8357415	ER
*	2-pole relay	8363168	CCWR

* Original ER relay to be used as CCWR relay.

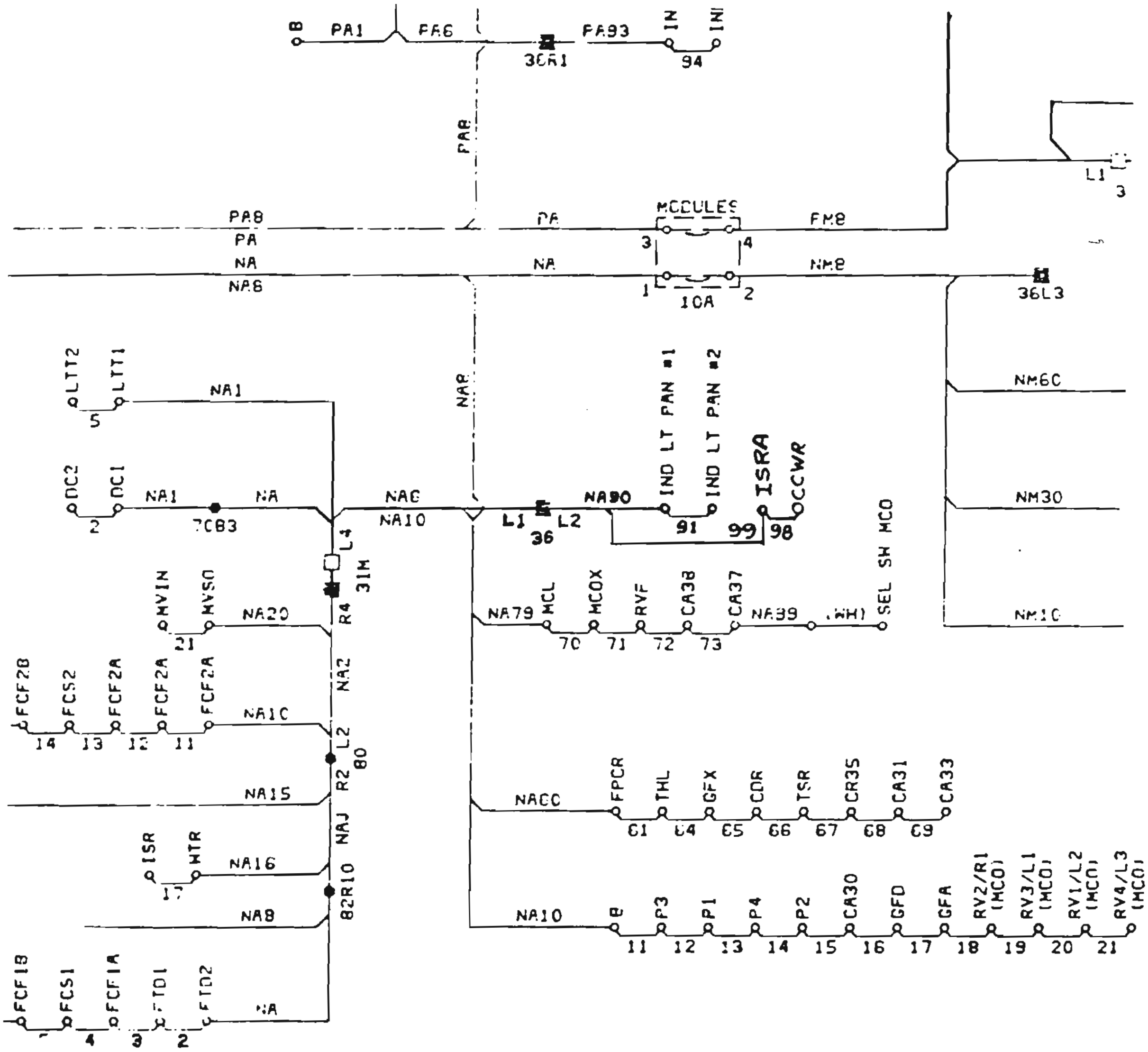
ELECTRIC CABINET EQUIPMENT LOCATION

APPENDIX A

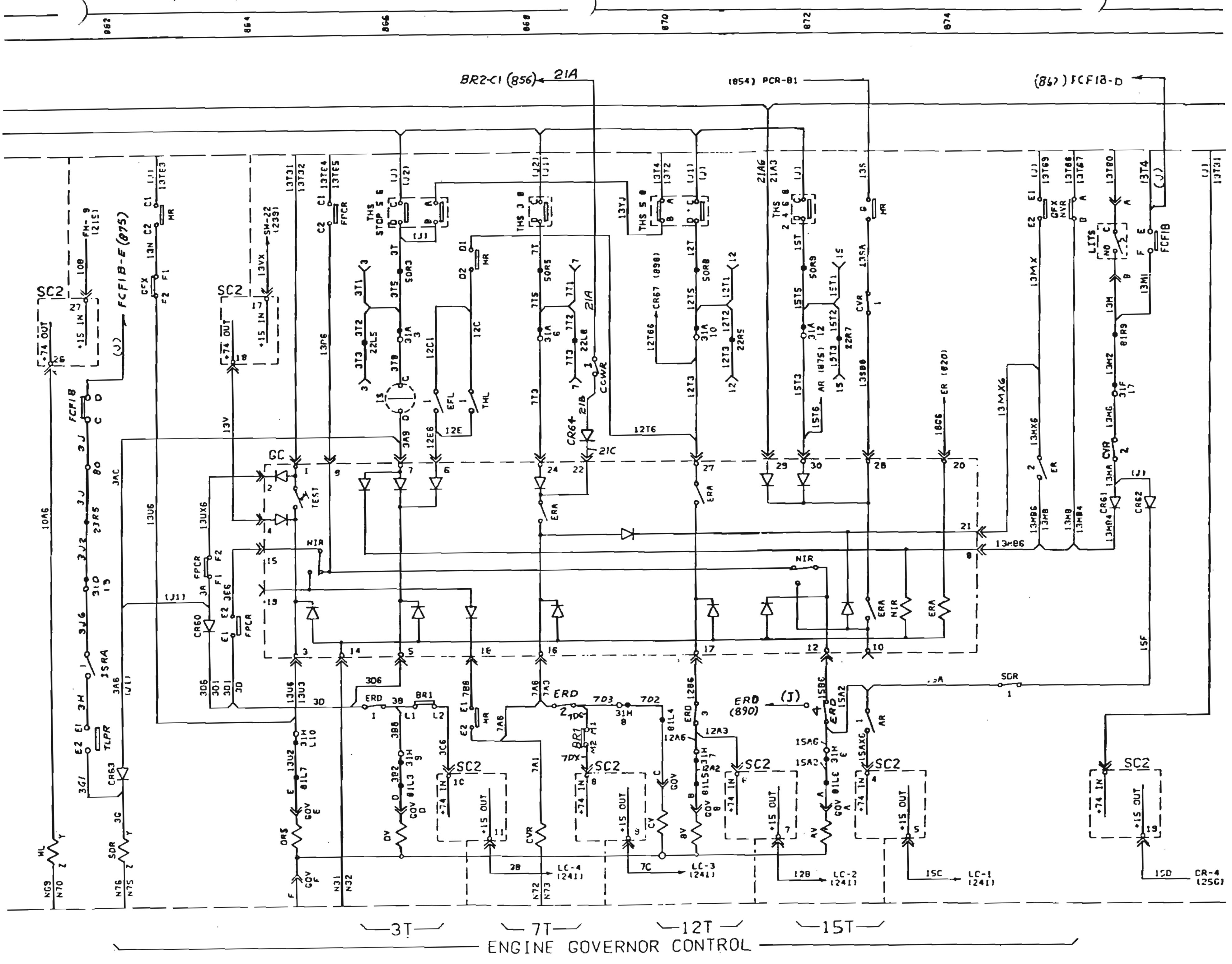


FRONT VIEW (CAB SIDE)

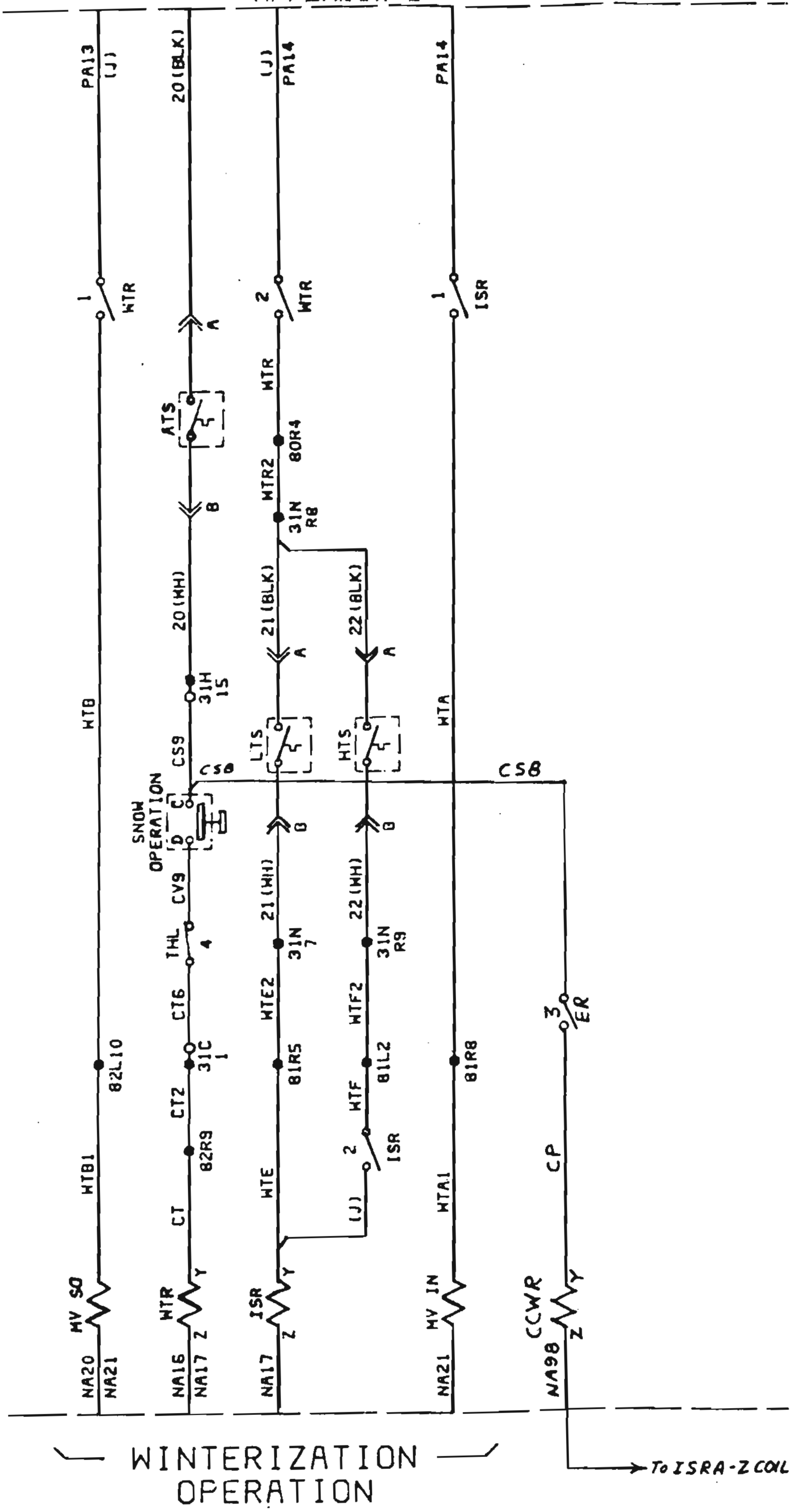
APPENDIX B



"NA" STRING SCHEMATIC


862
864
866
868
870
872
874
BR2-C1 (856) 21A
(854) PCR-81
(84) FCF1B-D
FCF1B-E (875)
FM-9 (215)
SM-22 (239)
SC2
+74 OUT
+15 IN
GC
TEST
NIR
ERA
FPCR
CR60
CR61
CR62
CR63
CR64
THS STOP 5 6
THS 3 8
THS 5 8
THS 2 4 6 8
MR
GFX
NVR
LITS
FCF1B
CVR
CCWR
EFL
THL
TLPR
1SRA
ERD
BR1
SDR
AR
ER (820)
CR67 (898)
AR (875)
ERD (890)
GOV
ORS
DV
CV
BV
AV
WL
SDR
LC-1 (241)
LC-2 (241)
LC-3 (241)
LC-4 (241)
CR-4 (25G)
3T
7T
12T
15T
ENGINE GOVERNOR CONTROL

APPENDIX D



WINTERIZATION OPERATION SCHEMATIC