OPERATION AND MAINTENANCE
HOT STANDBY
DR 6/11-135A AND 135EC
RADIO RECEIVER
DC POWER DIAGNOSIS

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The following logic diagram (MR 1) references local equipment indications and/or any necessary tests to determine the source of the power problem. When a unit has failed, refer to the " Radio Rcvr" tab under the " Replacement Procedures" tab to replace the failed unit with a spare. If tests are necessary, refer to " Radio Receiver Procedures" under the " Tests and Adjustments" tab.

This practice is reissued to change MSR 1, MSR 3, and Tables A, B, and C. The practice is used in binders 421-105-001, 421-105-001AC, 421-105-002AC, 421-105-003AC, 421-105-004AC, 421-105-080, 421-105-090, 421-105-100, 421-106-001, 421-106-001AC, 421-106-002AC, 421-106-003AC, 421-106-004AC, 421-106-020, 421-106-030, and 421-106-060.

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Warning: To prevent ESD (electrostatic discharge) damage to a unit, ensure all ESD precautions are followed.

Each vertical T/R (transmitter/receiver) pair in a radio frame is separately powered and fused by the -24 V/-48 V station battery plant. In addition, each vertical T/R pair can be connected using a single or a dual power feed from the battery plant to the radio frame. The single power feed provides one input voltage line to the top of the radio frame from which both the transmitter and receiver are powered. The dual power feed provides two independent input voltage lines, one for the transmitter and one for the receiver.

An input dc power failure can be detected by measuring at the power unit test points with an external voltmeter. The dc input voltage requirements are given in Table A.

A dc power output failure can be detected using the optional ALARM AND METER unit (see ***Note***) or by measuring at the power unit test points with an external voltmeter. The dc output voltage requirements are given in Table B.

A block diagram of the receiver dc power distribution is shown in Fig. 1. Loss of any output voltage may cause one or more units to malfunction.

Note: If using the optional bay meter to verify that the dc voltages are within limits and the displayed voltage is not correct, verify that the meter unit is functioning properly before proceeding. This may be determined by quickly checking the displayed indications on several other switch positions. If the reading at multiple positions seems to be out of limits, the meter unit should be suspected and replaced before proceeding.

ISSUING ORGANIZATION

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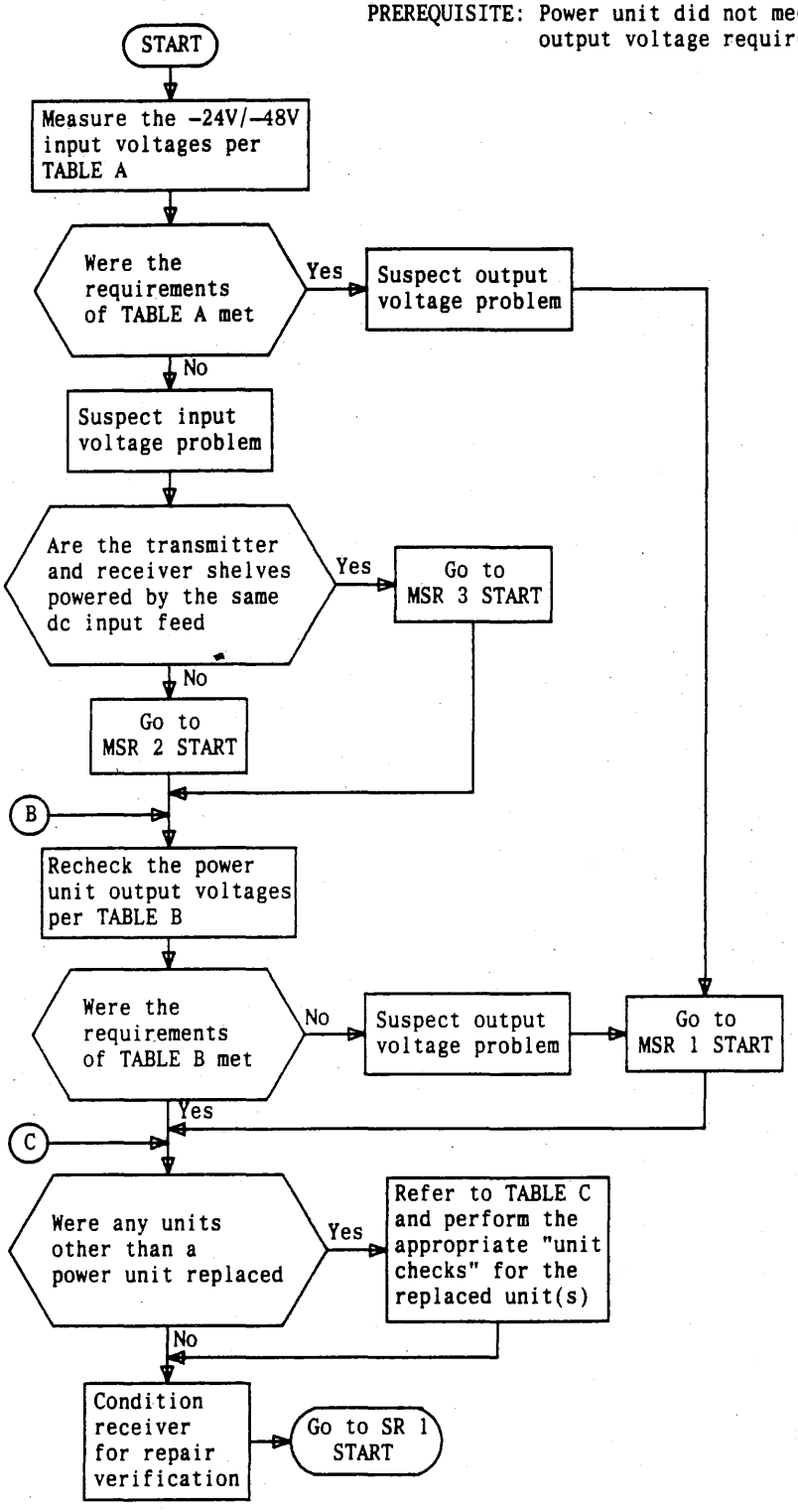
PREREQUISITE: Power unit did not meet one or more output voltage requirements.

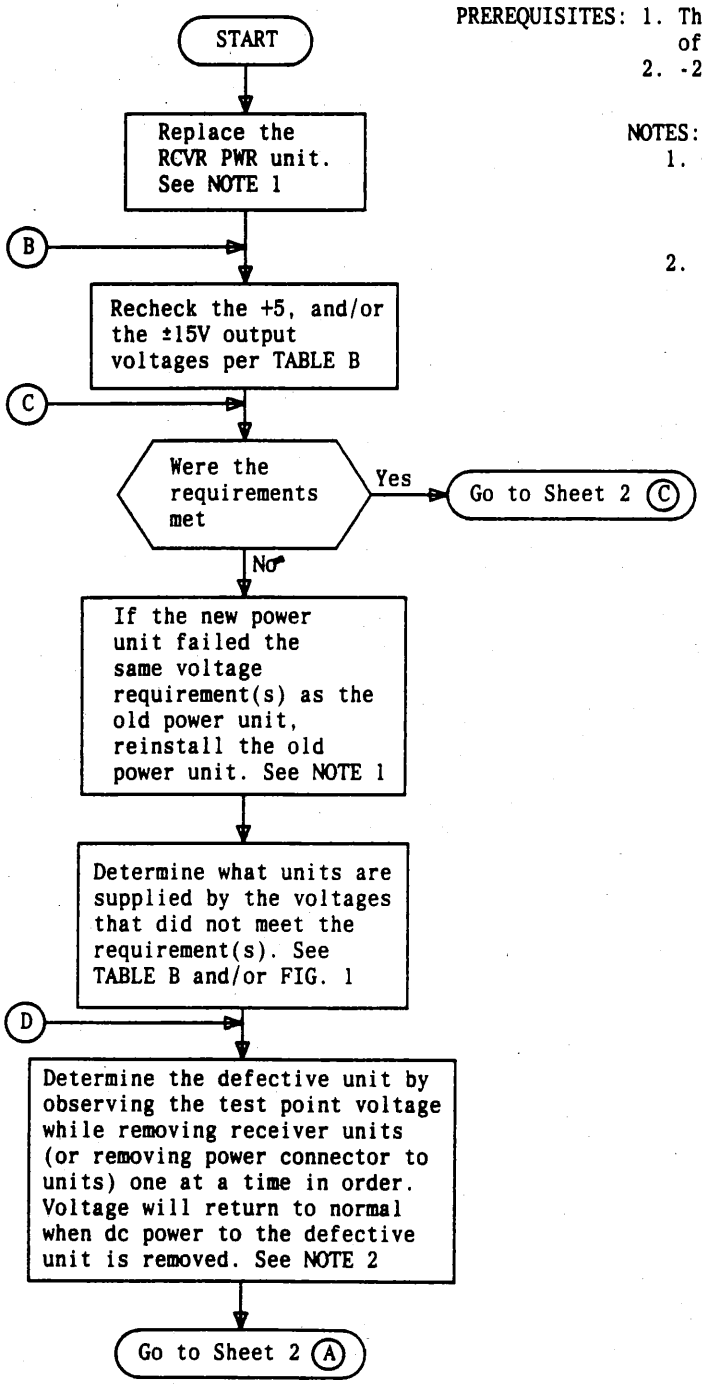


MR 1—Receiver DC Power Diagnosis

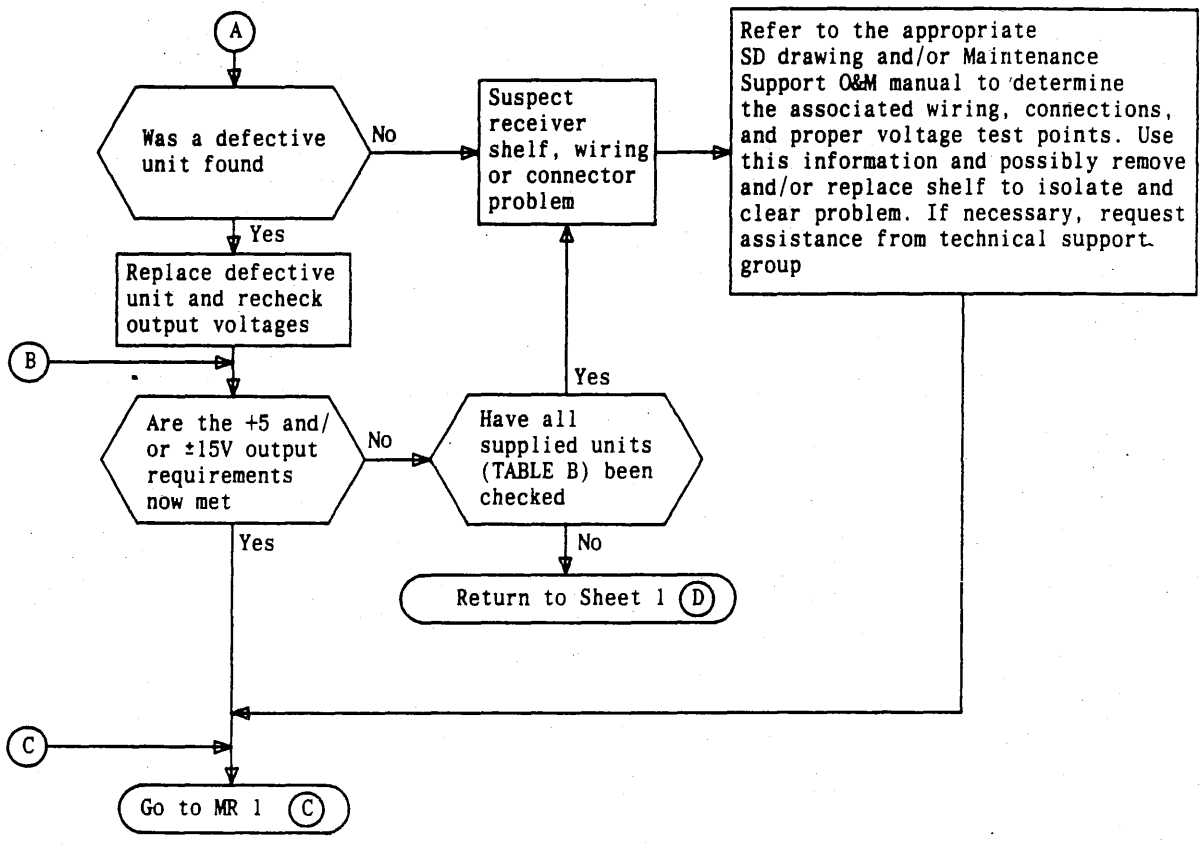
CAUTION: THIS PROCEDURE IS SERVICE AFFECTING UNLESS THE PROPER MANUAL PROTECTION SWITCHING OPERATION HAS BEEN PERFORMED.

PREREQUISITES:
1. The +5, +15 and/or −15V output voltages of the RCVR PWR unit did not meet requirement
2. -24V or -48V input voltage is good.

NOTES:
1. Operate pushbutton on the RCVR PWR unit to the STBY (out) position before removing or installing unit.
2. If excessive current is drawn by a short in any receiver unit, the power unit will automatically shut down.



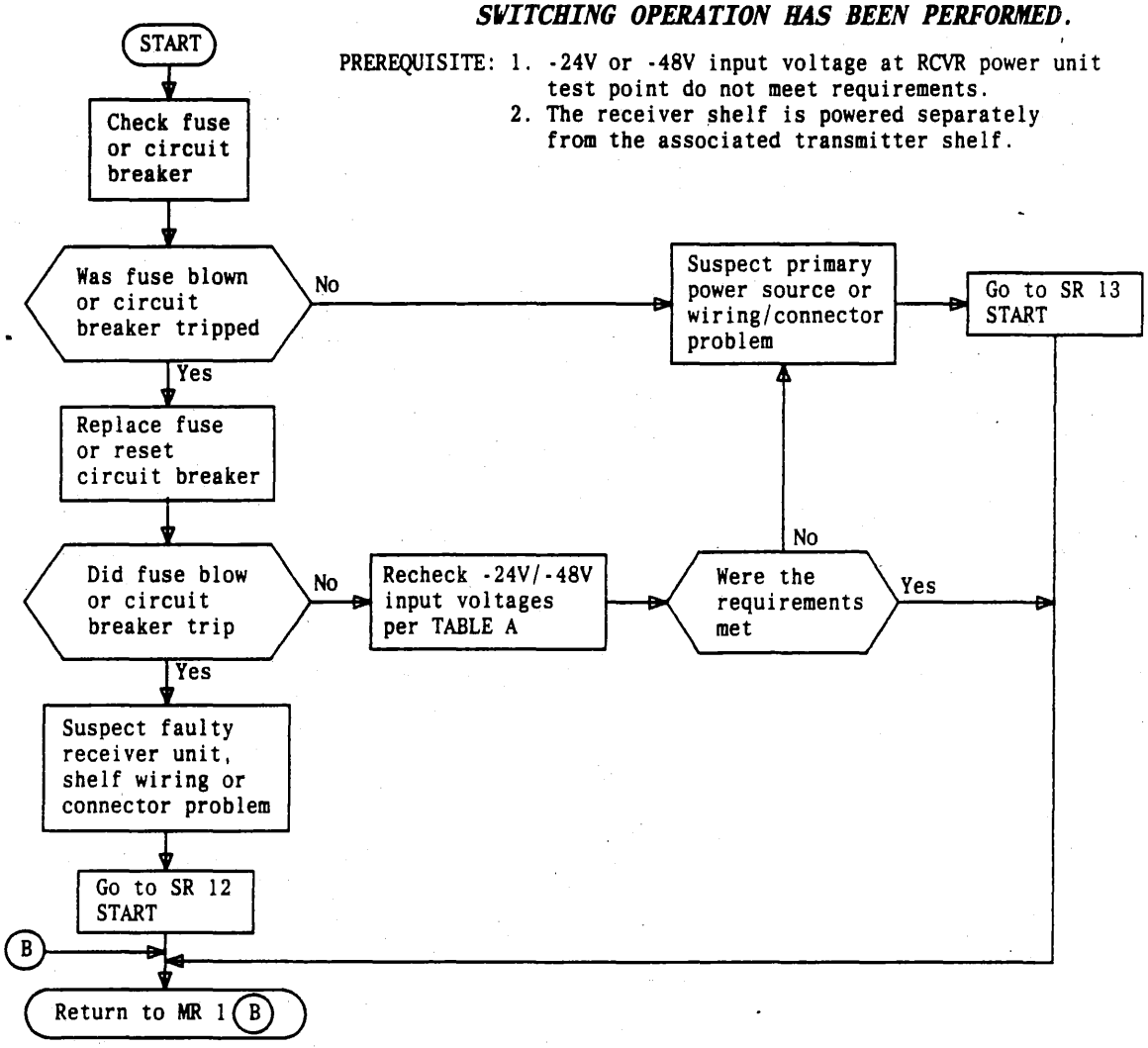
MSR 1—Receiver +5 and/or ±15 V DC Output Voltage Problem Diagnosis (Sheet 1 of 2)



MSR 1—Receiver +5 and/or ±15 V DC Output Voltage Problem Diagnosis (Sheet 2 of 2)

CAUTION: THIS PROCEDURE IS SERVICE AFFECTING UNLESS THE PROPER MANUAL PROTECTION SWITCHING OPERATION HAS BEEN PERFORMED.

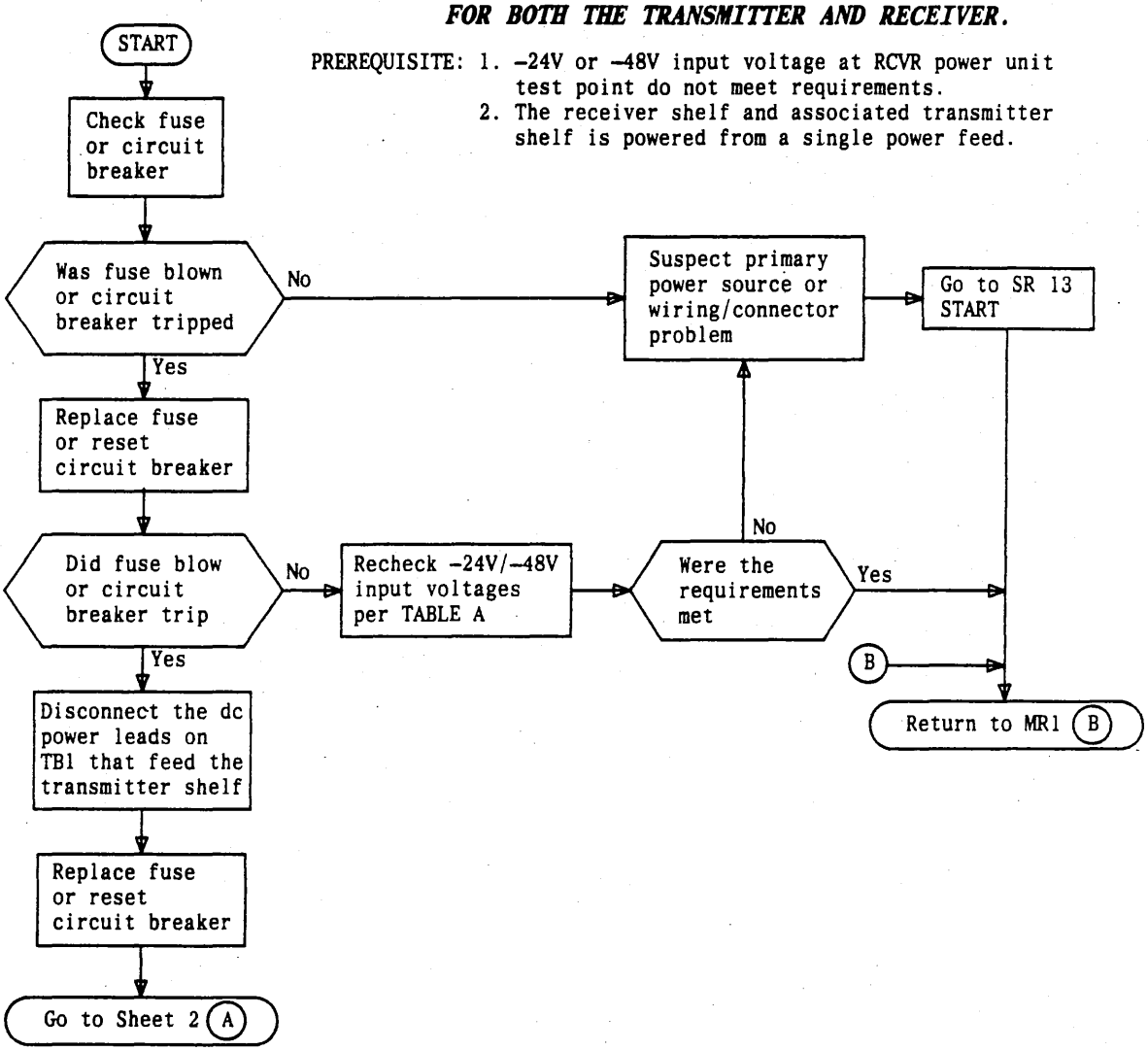
PREREQUISITE: 1. -24V or -48V input voltage at RCVR power unit test point do not meet requirements.
2. The receiver shelf is powered separately from the associated transmitter shelf.



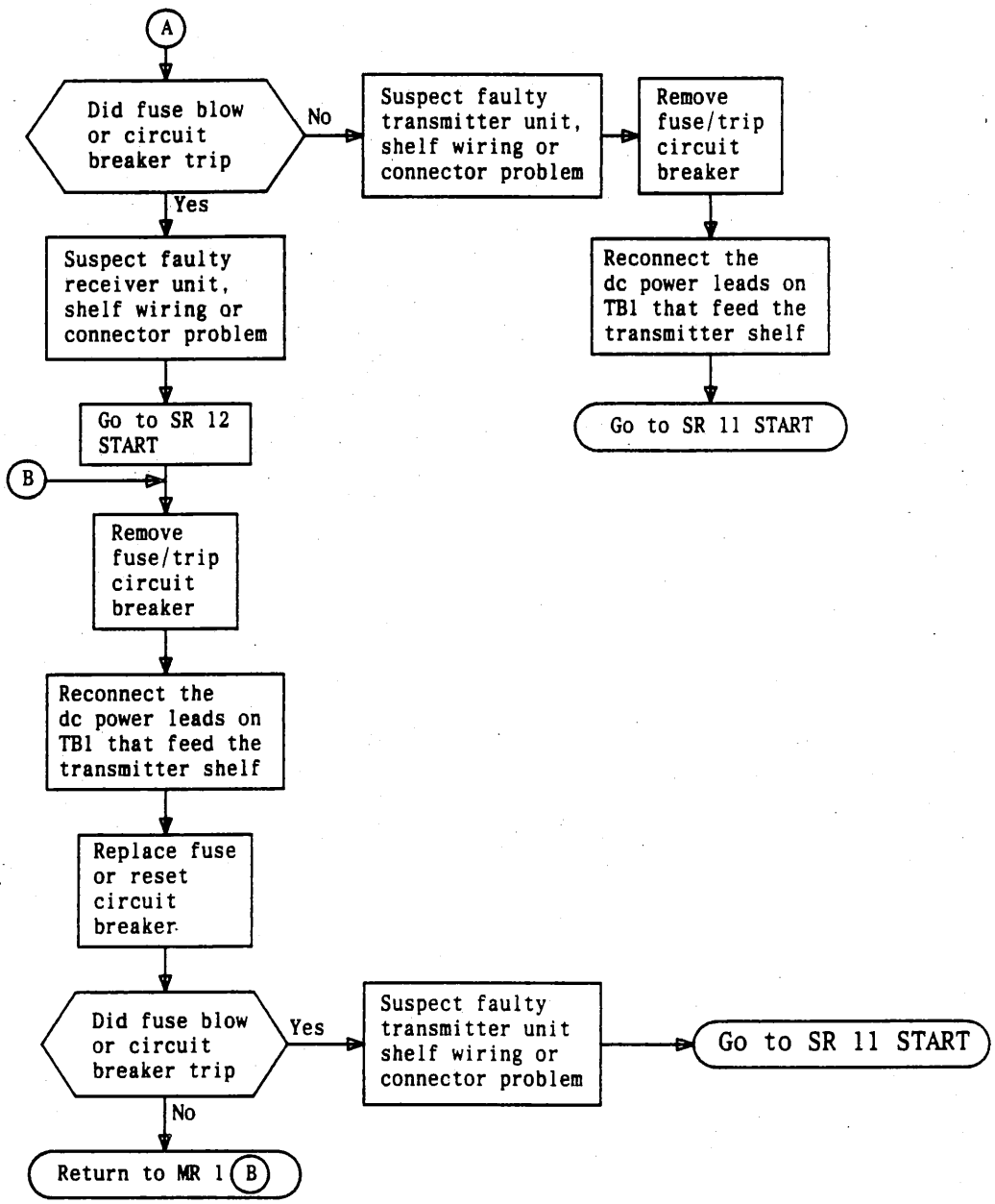
MSR 2—Receiver DC Input Voltage Problem Diagnosis—Dual T/R DC Input Feed

CAUTION: THIS PROCEDURE IS SERVICE AFFECTING UNLESS THE PROPER MANUAL PROTECTION SWITCHING OPERATION HAS BEEN PERFORMED FOR BOTH THE TRANSMITTER AND RECEIVER.

PREREQUISITE: 1. −24V or −48V input voltage at RCVR power unit test point do not meet requirements.
2. The receiver shelf and associated transmitter shelf is powered from a single power feed.



MSR 3—Receiver DC Input Voltage Problem Diagnosis—Single T/R DC Input Feed (Sheet 1 of 2)



MSR 3—Receiver DC Input Voltage Problem Diagnosis—Single T/R DC Input Feed (Sheet 2 of 2)

TABLE A

RECEIVER DC INPUT VOLTAGE REQUIREMENTS

BATTERY INPUT SUPPLY	MULTIMETER TEST CONNECTIONS			REQUIREMENTS	UNITS SUPPLIED
	UNIT	POSITIVE TEST LEAD	COMMON TEST LEAD		
−24V	RCVR PWR	−24V	GRD	−20.0 V to −28.5 V	(1) RCVR POWER (2) RCVR CONV
−48V	RCVR PWR	−48V	GRD	−42.0 V to −60.0 V	

TABLE B

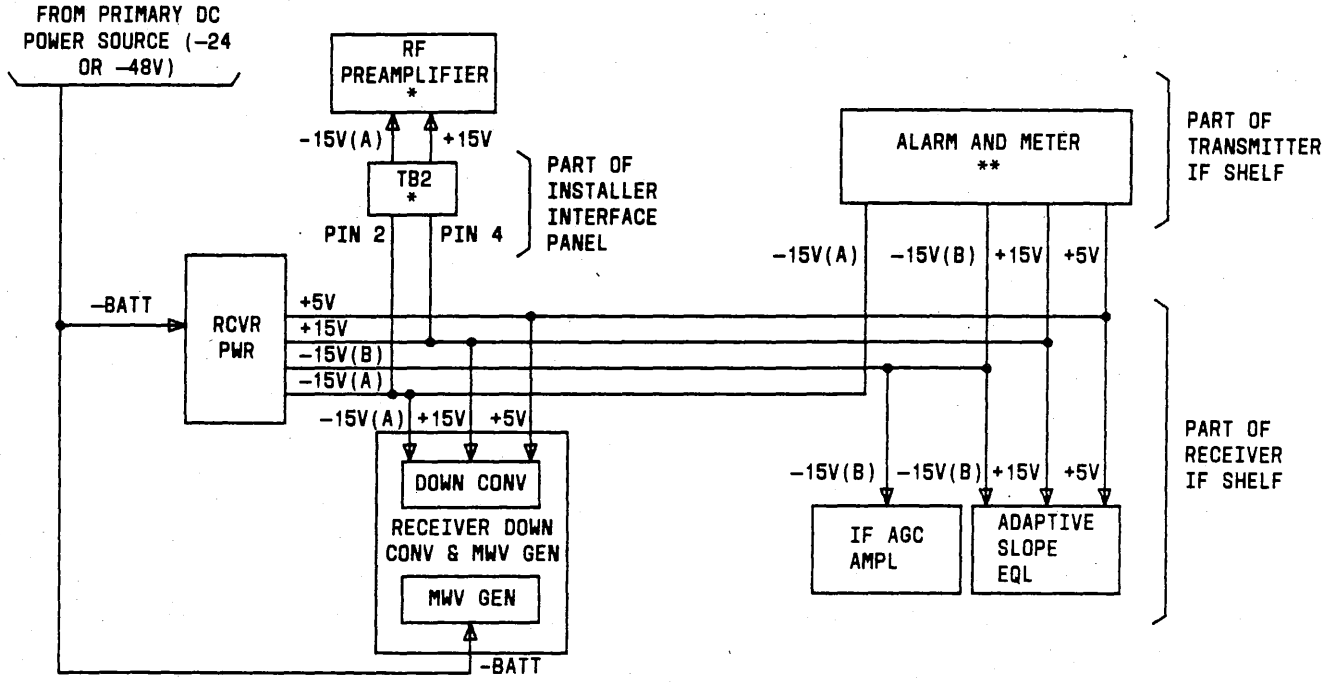
RECEIVER DC OUTPUT VOLTAGE REQUIREMENTS

ALARM AND METER UNIT SWITCH POSITION	MULTIMETER TEST CONNECTIONS ON POWER UNIT		REQUIREMENTS	UNITS SUPPLIED
	POSITIVE TEST LEAD	COMMON TEST LEAD		
RCVR +5V	+5V	GRD	+4.7 V to +5.3 V	1 ALM/ALM & MTR 2 RCVR CONV 3 ADAPTIVE SLOPE EQL
RCVR −15V A	−15V	GRD	−14.6 V to −15.4 V	1 RCVR CONV 2 RF PREAMP 3 ALM & MTR
RCVR −15V B	−15V	GRD	−14.6 V to -15.4 V	1 ALM & MTR 2 ADAPTIVE SLOPE EQL 3 IF AGC AMPL
RCVR +15V	+15V	GRD	+14.6 V to +15.4 V	1 RCVR CONV 2 RF PREAMP 3 ALM & MTR 4 ADAPTIVE SLOPE EQL

TABLE C

UNIT CHECKS REQUIRED AFTER REPLACEMENT

UNIT REPLACED	INITIAL PROCEDURES TO BE PERFORMED	PROCEDURE REFERENCE
IF AGC AMPL	IF AGC AMPL Unit Initial Check	SR 9
RCVR CONV	RCVR CONV Unit Initial Check	SR 8
ADAPTIVE SLOPE EQL	Adaptive Slope Equalizer Unit Initial Check	SR 10
RF PREAMP	RF Preamp Unit Initial Check	SR 7



* The RF preamplifier (if equipped) is powered by the first and/or second receiver (if space diversity) equipped in a radio frame

** ALARM AND METER unit powered from transmitter shelf. Receiver voltage leads provided for monitoring purposes only.

Fig. 1—Receiver DC Power Distribution Block Diagram