OPERATION AND MAINTENANCE
1×N FREQUENCY DIVERSITY
DR 6/11-135A AND 135EC
TWT AMPLIFIER
DC POWER DIAGNOSIS

CONTENTS PAGE

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1. GENERAL

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 TRMTR tab under the REPLACEMENT PROCEDURES tab to replace the failed unit with a spare. If tests are necessary, refer to the RADIO TRANSMITTER PROCEDURES tab under the TESTS AND ADJUSTMENTS tab.

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

Each vertical transmitter/receiver (T/R) 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 power feed from the battery plant to the radio frame or a dual power feed. The single power feed provides one input voltage line to the top of the radio frame, from which point 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.

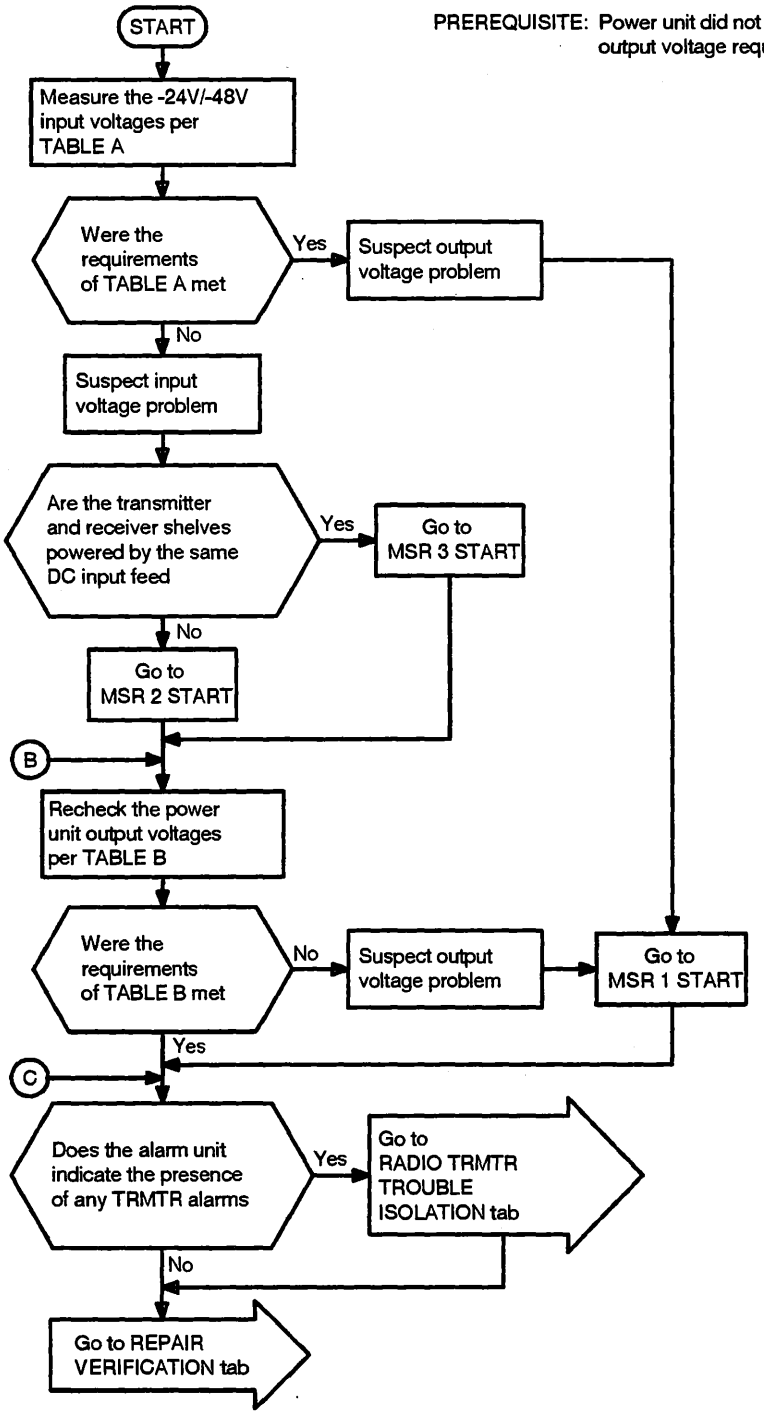
A block diagram of the transmitter DC power distribution is shown in Figure 1. Loss of any output voltage may cause one or more units to malfunction.

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, suspect the meter unit and replace before proceeding.

1.1 UPDATE INFORMATION

This practice is reissued to add MSRs 4 and 5. The practice is used in binders 421-102-001, 421-102-090, 421-103-001, and 421-103-090.

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



MR 1—Transmitter DC Power Diagnosis

TABLE A
TRANSMITTER DC INPUT VOLTAGE REQUIREMENTS

BATTERY INPUT SUPPLY	MULTIMETER TEST CONNECTIONS			REQUIREMENTS	UNITS SUPPLIED
	UNIT	POSITIVE TEST LEAD	COMMON TEST LEAD		
—24 V	TRMTR PWR	—24 V	GRD	—20.0 V to —28.5 V	TRMTR CONV TWT POWER SUPPLY TWT AMPLIFIER
—48 V	TRMTR PWR	—48	GRD	—42.0 V to —60.0 V	

TABLE B
TRANSMITTER 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		
TRMTR +5 V	+5 V	GRD	+4.7 to +5.3 V	ALM/ALM & MTR IF PDSTR TRMTR CONV ALC NETWORK
TRMTR —15 V	—15 V	GRD	—14.6 to —15.4 V	
TRMTR +15 V	+15 V	GRD	+14.6 V to +15.4 V	ALM/ALM & MTR IF PDSTR TRMTR CONV

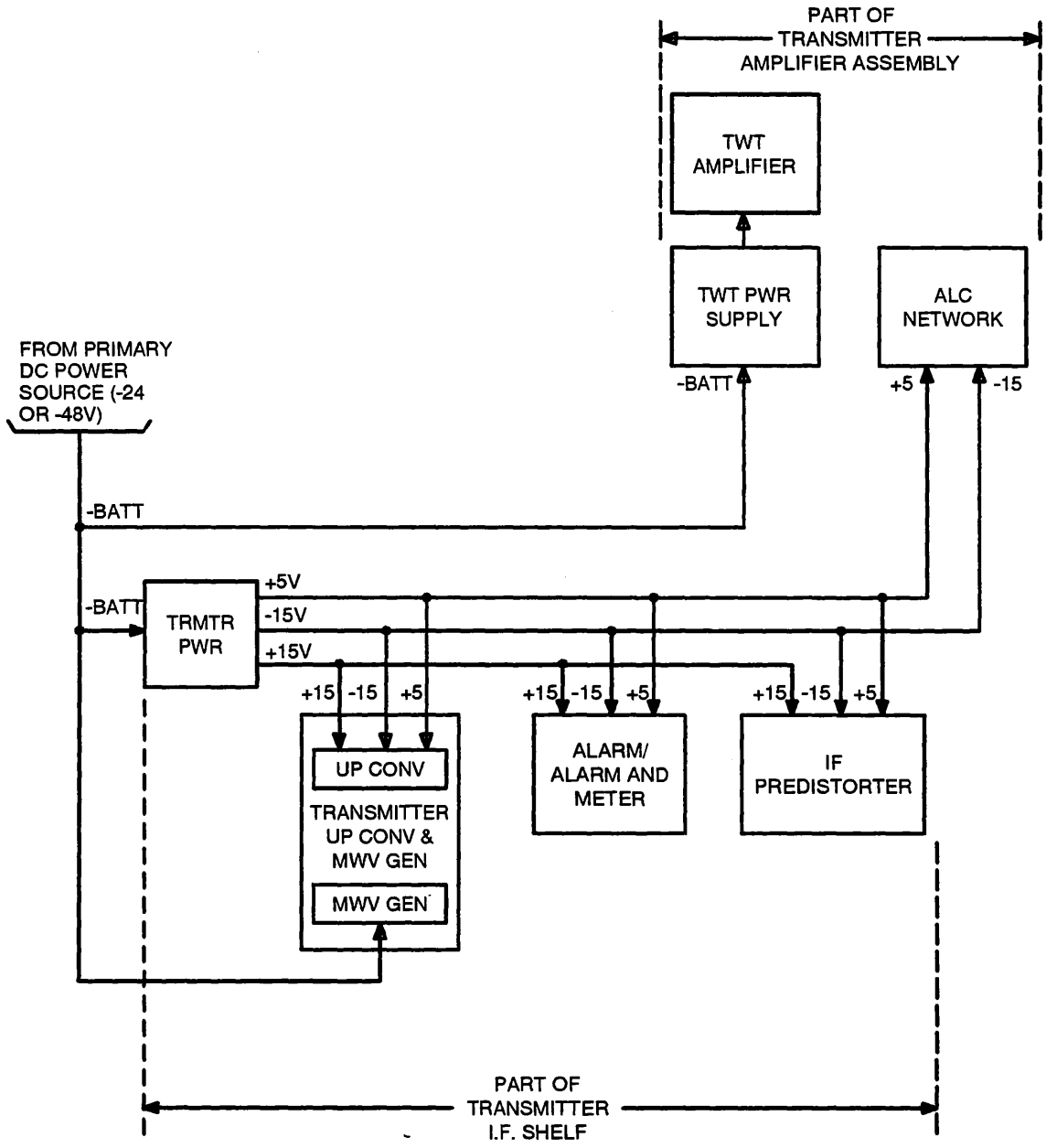
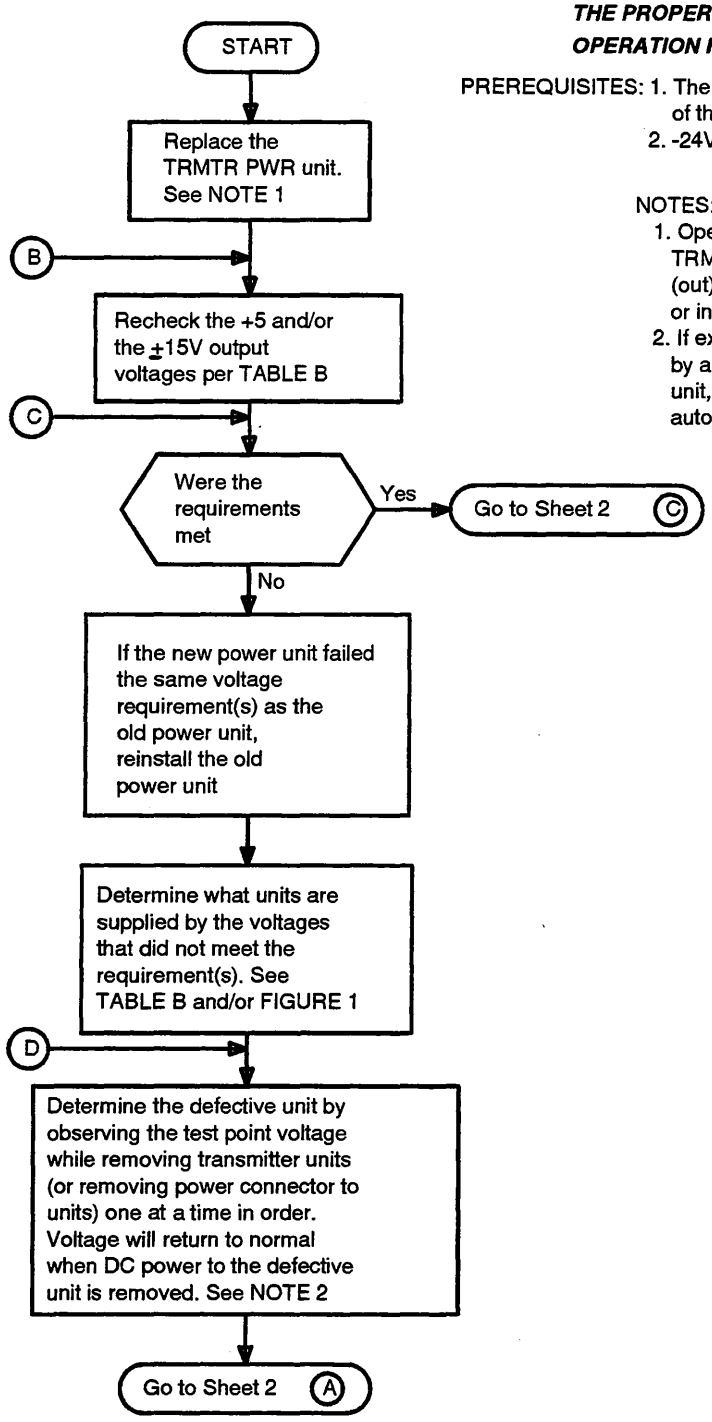


Figure 1 – Transmitter DC Power Distribution Block Diagram

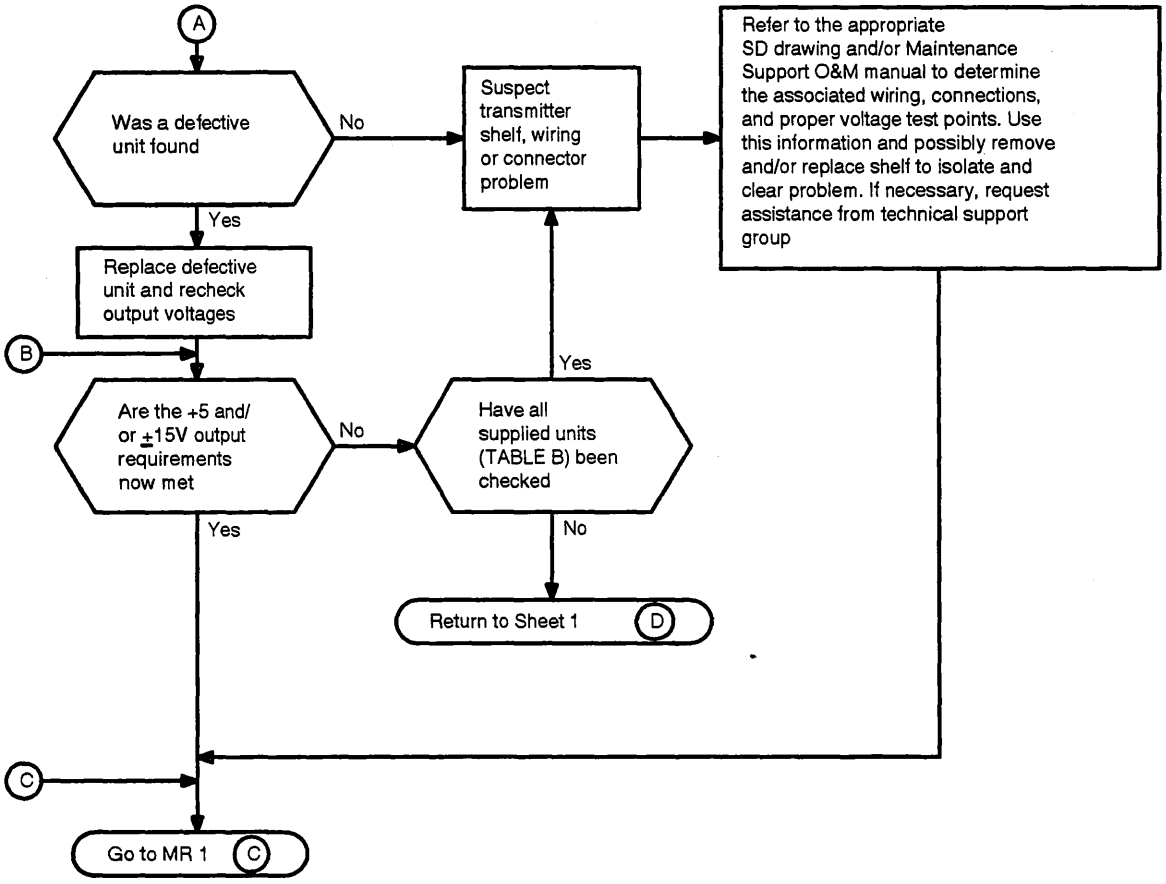
CAUTION: THIS PROCEDURE IS SERVICE AFFECTING UNLESS THE PROPER MANUAL PROTECTION SWITCHING OPERATION HAS BEEN PERFORMED.

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

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



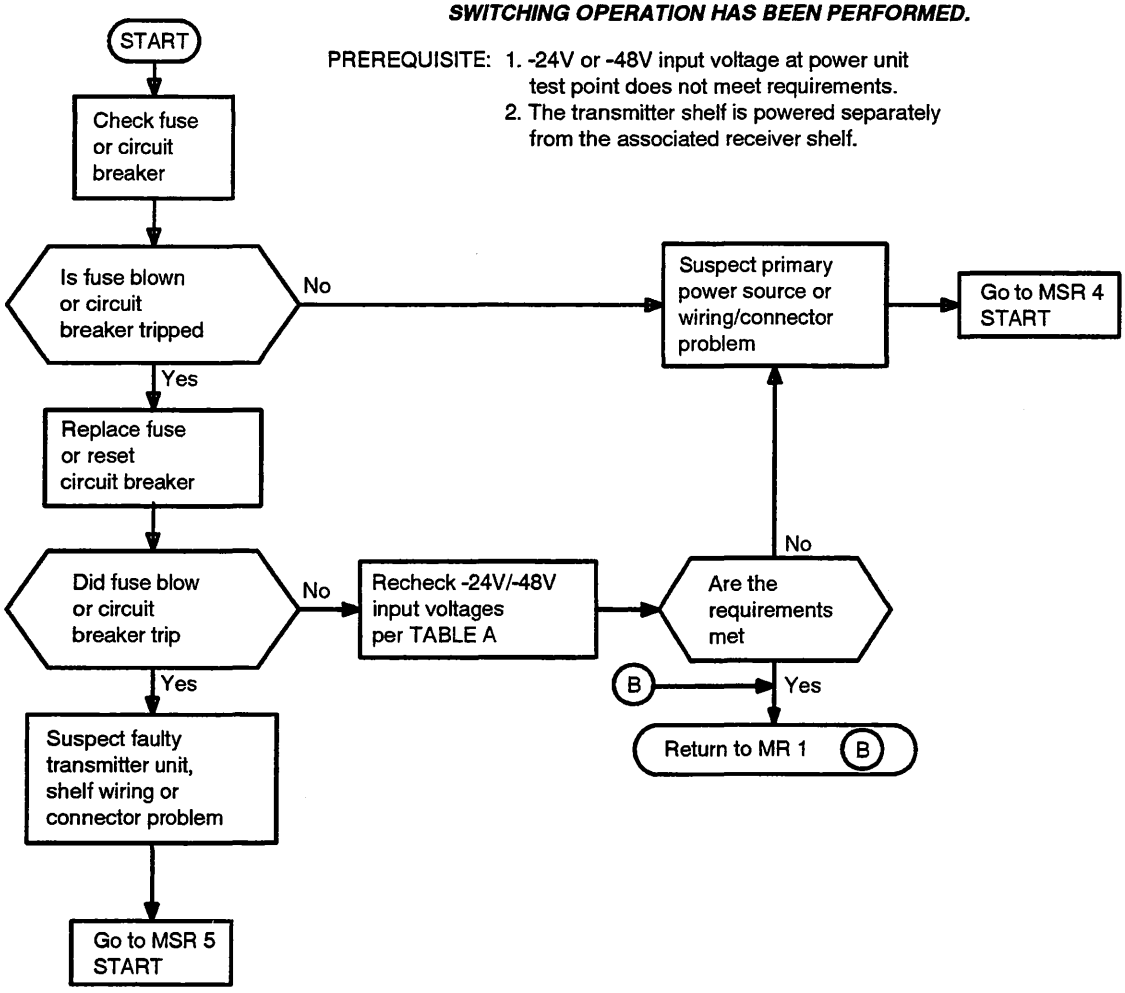
MSR 1—Transmitter +5 and/or ± 15 V DC Output Voltage Problem Diagnosis (Sheet 1 of 2)



MSR 1—Transmitter +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.

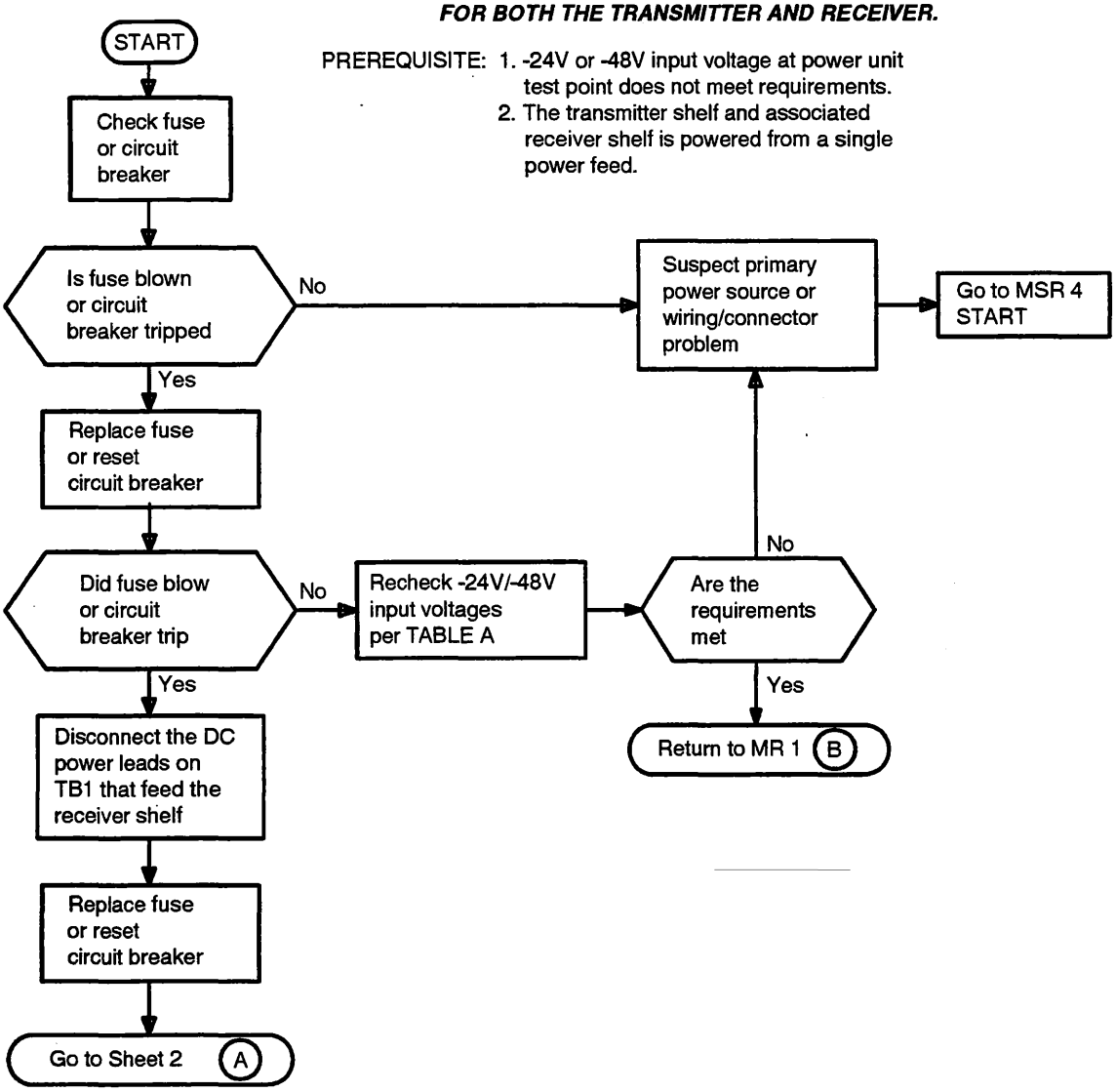
PREREQUISITE: 1. -24V or -48V input voltage at power unit test point does not meet requirements.
2. The transmitter shelf is powered separately from the associated receiver shelf.



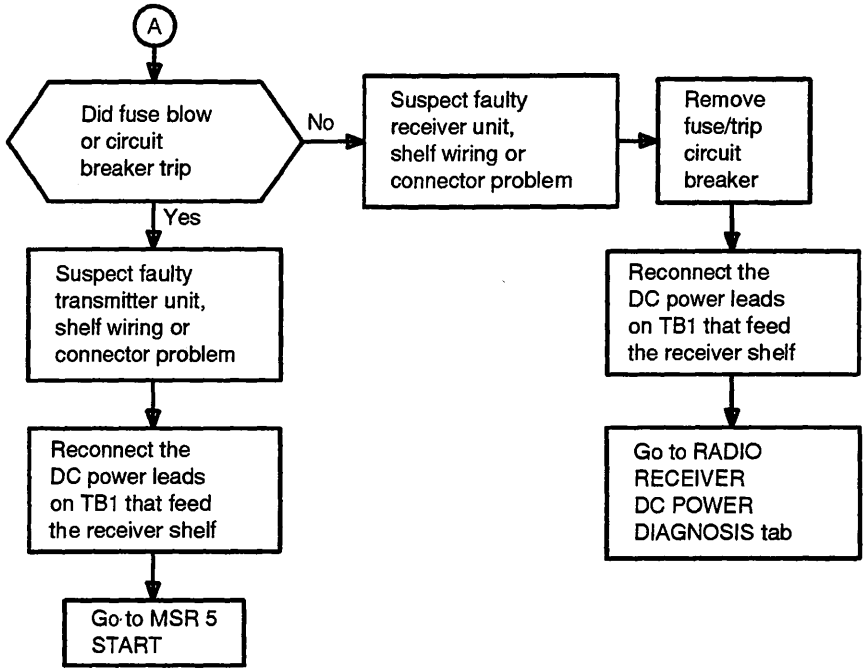
MSR 2—Transmitter DC Input Voltage Problem Diagnosis—Dual T/R DC Input Feed

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

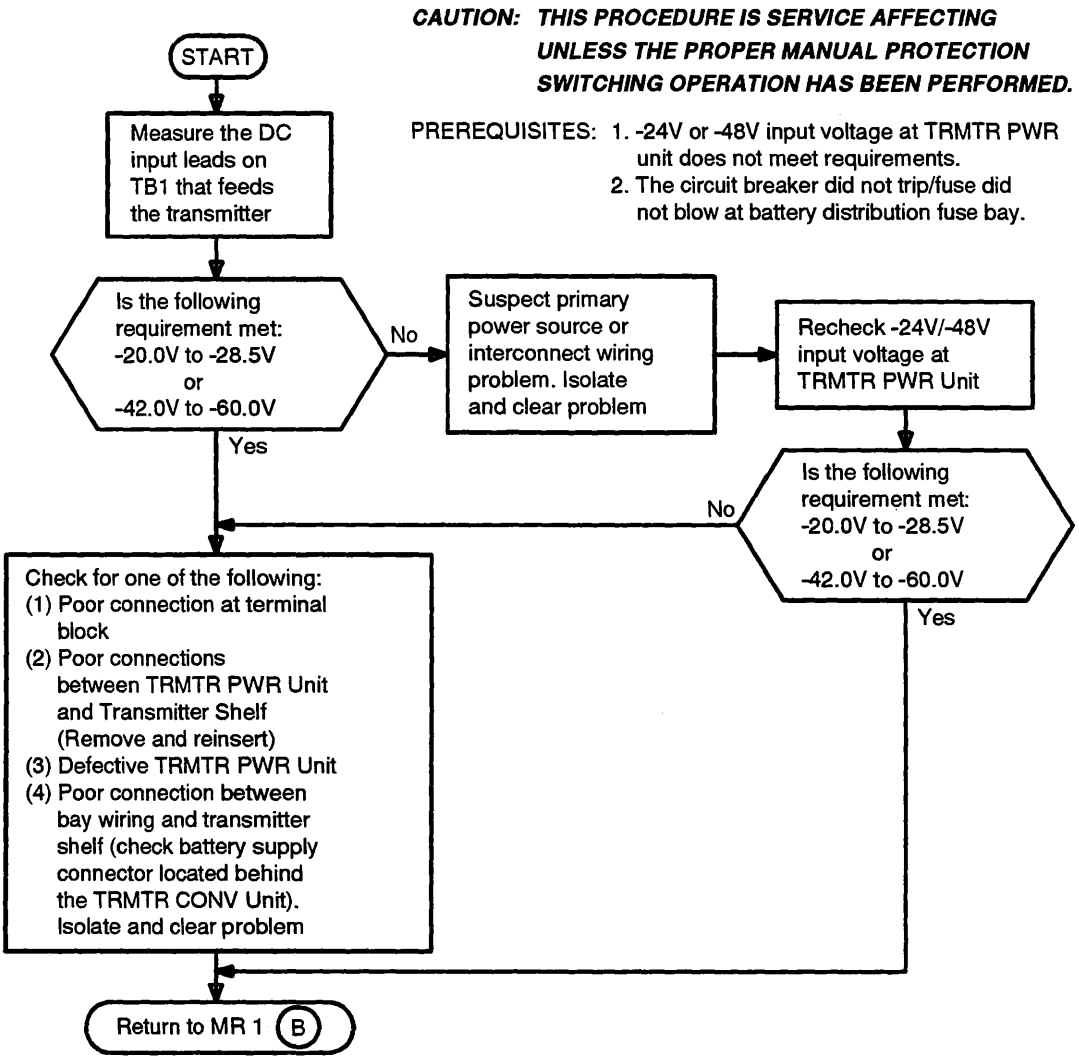
PREREQUISITE:
1. -24V or -48V input voltage at power unit test point does not meet requirements.
2. The transmitter shelf and associated receiver shelf is powered from a single power feed.



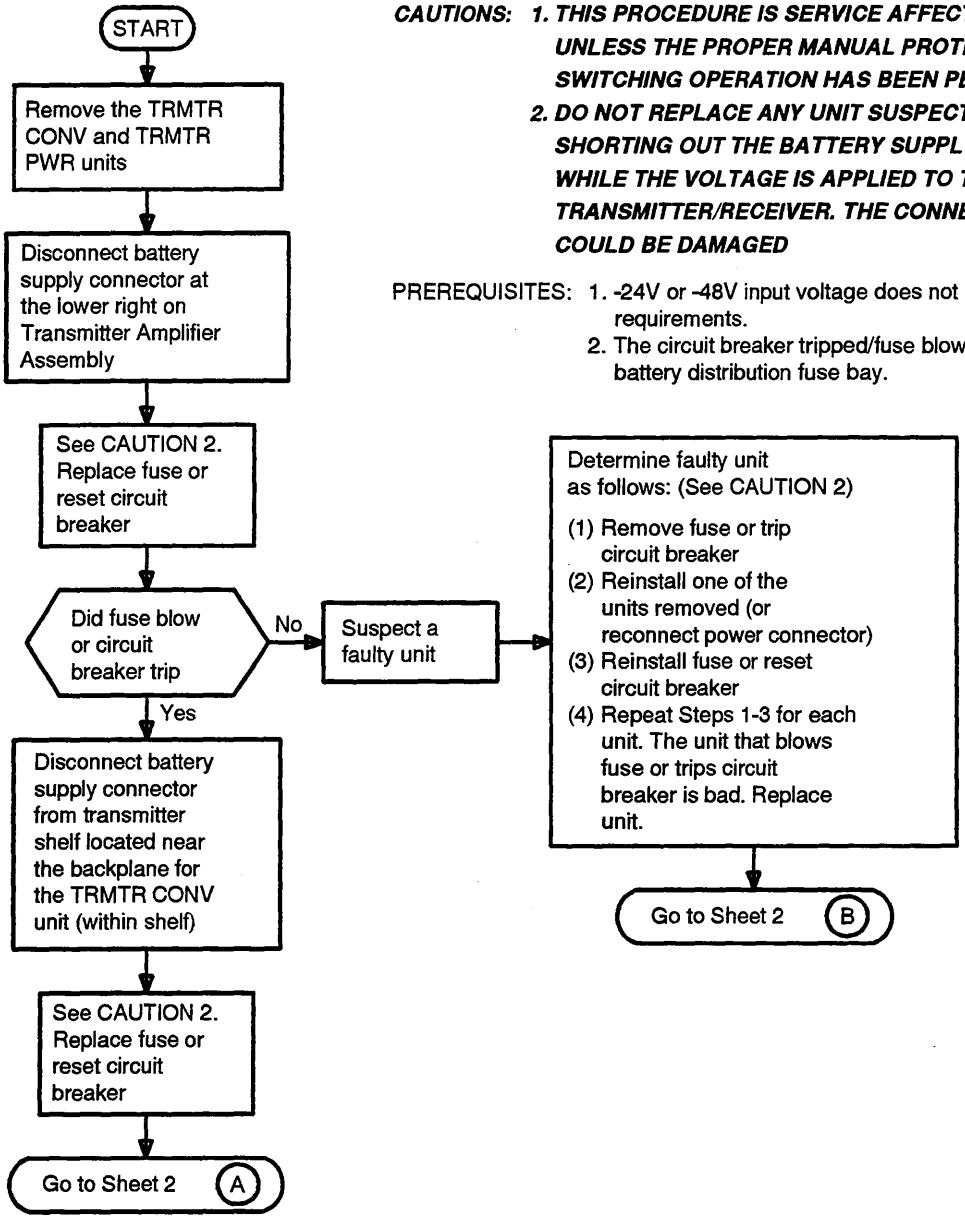
MSR 3—Transmitter DC Input Voltage Problem Diagnosis—Single T/R DC Input Feed (Sheet 1 of 2)



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



MSR 4—Resolving DC Input Problems When Circuit Breaker Did Not Trip or When Fuse Did Not Blow

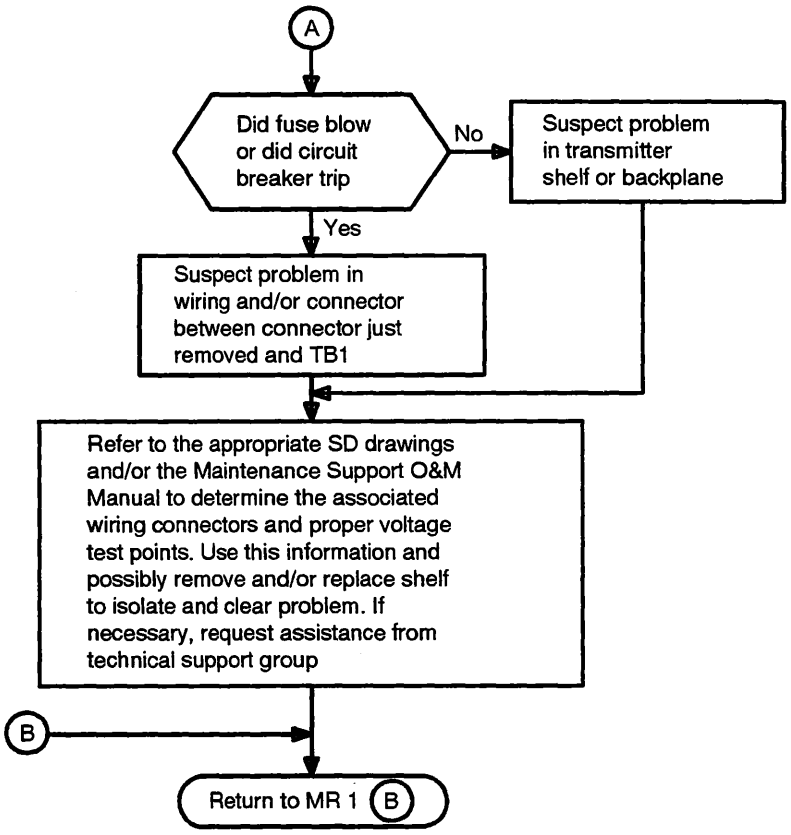


CAUTIONS: ***1. THIS PROCEDURE IS SERVICE AFFECTING UNLESS THE PROPER MANUAL PROTECTION SWITCHING OPERATION HAS BEEN PERFORMED.***

2. DO NOT REPLACE ANY UNIT SUSPECTED OF SHORTING OUT THE BATTERY SUPPLY VOLTAGE WHILE THE VOLTAGE IS APPLIED TO THE TRANSMITTER/RECEIVER. THE CONNECTOR COULD BE DAMAGED

PREREQUISITES: 1. -24V or -48V input voltage does not meet requirements.
2. The circuit breaker tripped/fuse blown at battery distribution fuse bay.

MSR 5—Resolving Transmitter Shelf DC Input Problems When Circuit Breaker is Tripped or Fuse is Blown (Sheet 1 of 2)



MSR 5—Resolving Transmitter Shelf DC Input Problems When Circuit Breaker is Tripped or Fuse is Blown (Sheet 2 of 2)