

**OPERATION AND MAINTENANCE
1×N FREQUENCY DIVERSITY
DR 6/11-135A AND 135EC
RF PREAMPLIFIER ALARM**

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1. GENERAL

This practice is used to clear a Receiver RF preamplifier alarm in a 1×N Frequency Diversity, DR6/11-135 Digital Radio System.

1.1 UPDATE INFORMATION

This practice is reissued to update text and to revise the Receiver RF PRE AMP Alarm Diagnosis flowchart. The practice is used in binders 421-102-001, 421-102-080, 421-102-090, 421-102-100, 421-103-001, 421-103-080, and 421-103-090, 421-103-100.

2. RF PREAMPLIFIER ALARM CLEARING

The following logic diagram, MR 1, is used to clear a RCVR RF PRE AMP indicator on the ALARM/ALARM AND METER unit. The RF preamplifier unit is equipped with a green LED that is ON during normal operation. The RF PRE AMP alarm monitors the FET bias current. When bias current is insufficient or excessive, a relay in the RF preamplifier unit closes a contact that activates the RF PRE AMP alarm in the ALARM AND METER unit. When the alarm is activated, the green LED on the RF preamplifier unit is normally OFF. Pulling the DC power plug of the RF preamplifier unit results in a silent RF preamplifier unit failure. When a unit has failed, refer to the RADIO RCVR tab under the REPLACEMENT PROCEDURES tab to replace the failed unit with a spare.

The DC power arrangement for the RF preamplifier unit depends on the receiver configuration. Figure 1 shows a typical DC power and alarm arrangement for a non-space diversity receiver with two transmitters/receivers (T/Rs) available.

Connections for a space diversity RF preamplifier and a "hot cut" cable for frequency diversity systems *without* space diversity are also shown in Figure 1. A hot cut cable should be provided to allow for the hot cut replacement of a failed RF preamplifier in non-space diversity systems. Space diversity systems do *not* require the hot cut cable.

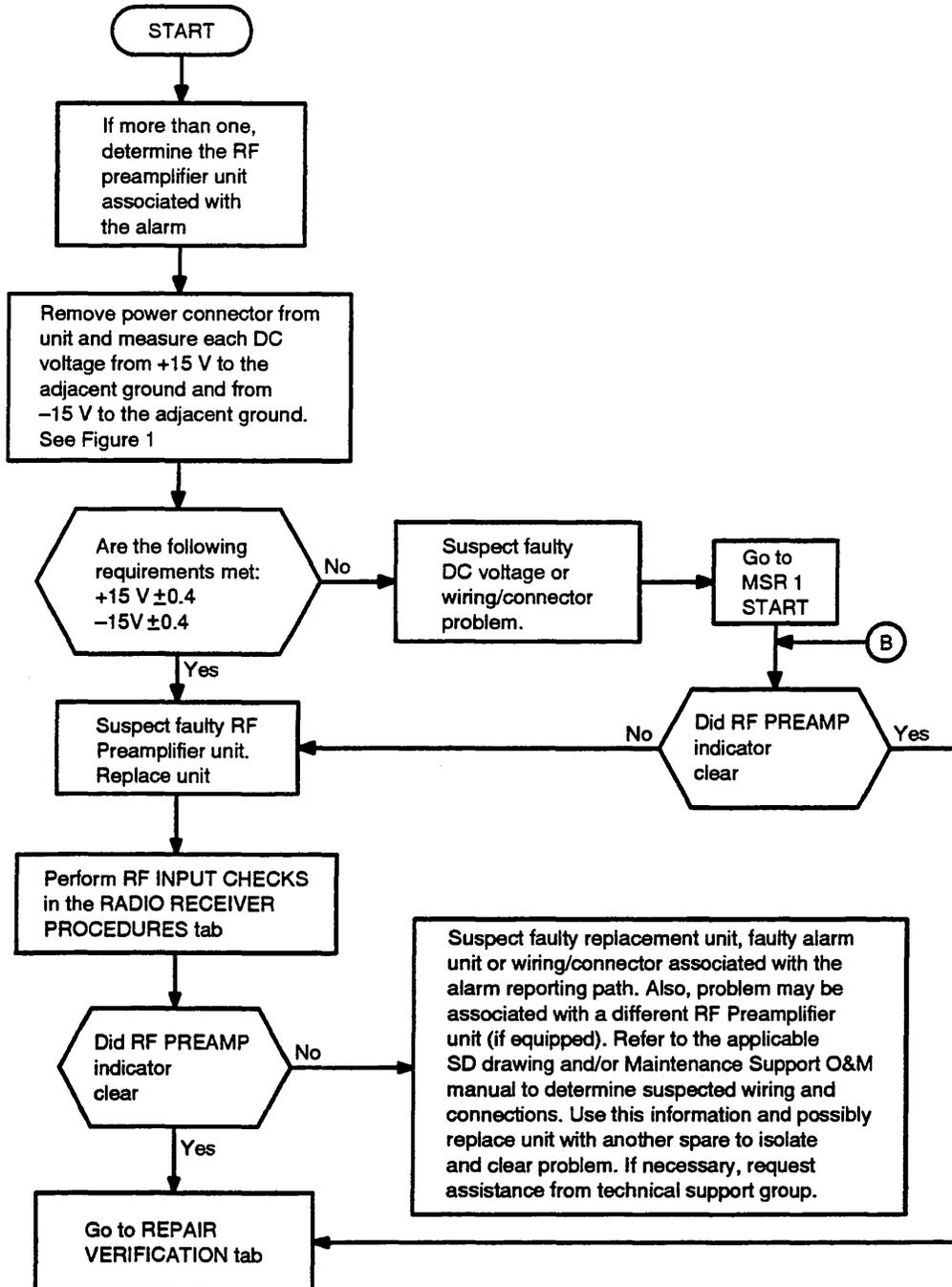
Caution: *To use only one T/R, request assistance from the technical support group for proper powering.*

Under severe fading conditions, a reduced signal level from the output of a failed RF preamplifier unit will be compensated for by the receiver automatic gain control (AGC) circuits. Therefore, even with a partial preamplifier failure, the proper IF output signal level for each radio receiver will be maintained, and no alarms other than the RF PRE AMP alarm will be generated. However, the AGC voltage(s) for the receiver(s) being fed may be abnormal.

The nominal gain of the RF preamplifier unit is stamped on the unit. Since the RF preamplifier unit provides gain for all receivers connected to the same waveguide run, a decrease in signal level equally affects all receivers associated with that particular waveguide run. This decrease in signal level manifests itself as an increase in AGC voltage that can be measured and compared with the nominal AGC voltage recorded on the RADIO DATA CARD plug-in. The AGC voltage can be measured by setting the selector switch on the associated ALARM AND METER unit to the RCVR AGC V position or at the AGC V test point on the IF AGC AMPL unit for the associated receiver(s). If the 4400 Series Receiver Down-Converter unit is installed, RF signal level changes can be detected by measuring the AGC voltage at the jacks on the down-converter faceplate.

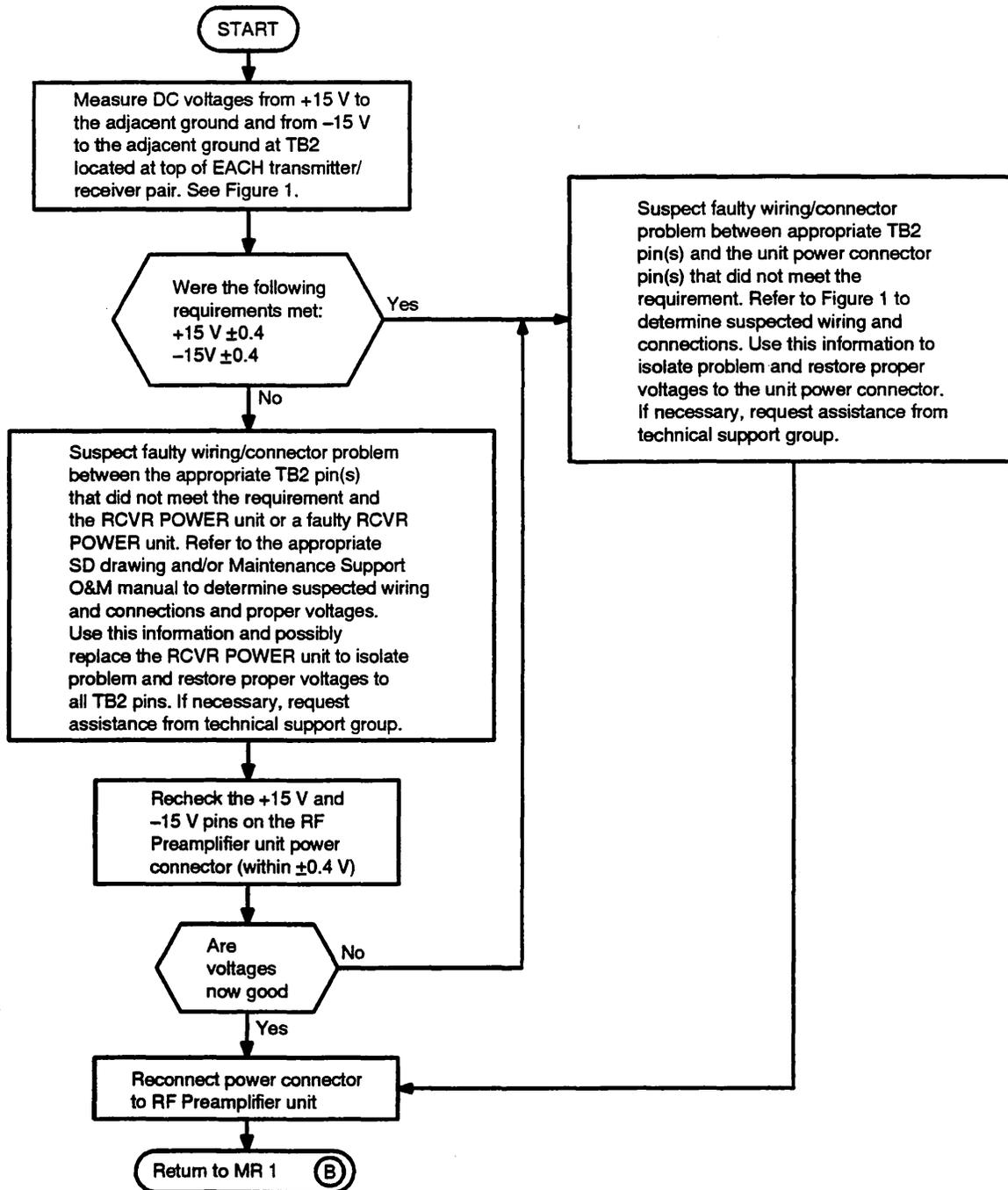
Rarely, an RF preamplifier unit can fail and not turn off the NORM indicator on the unit or not activate the RF PRE AMP alarm. This trouble can be identified by observing if the AGC voltages associated with the receivers on the affected waveguide run have increased. This trouble can also be identified by measuring the down-converter RF input signal level for the affected receiver(s) and comparing the results with the value recorded on the RADIO DATA CARD plug-in.

PREREQUISITE: RCVR RF PREAMP alarm indicator lighted on the radio
ALARM/ALARM AND METER unit



MR 1—Receiver RF PRE AMP Alarm Diagnosis

PREREQUISITE: The -15 V DC input voltage at the power connector to the RF Preamp unit is bad.



MSR 1—Preamp DC Input Voltage Problem Diagnosis

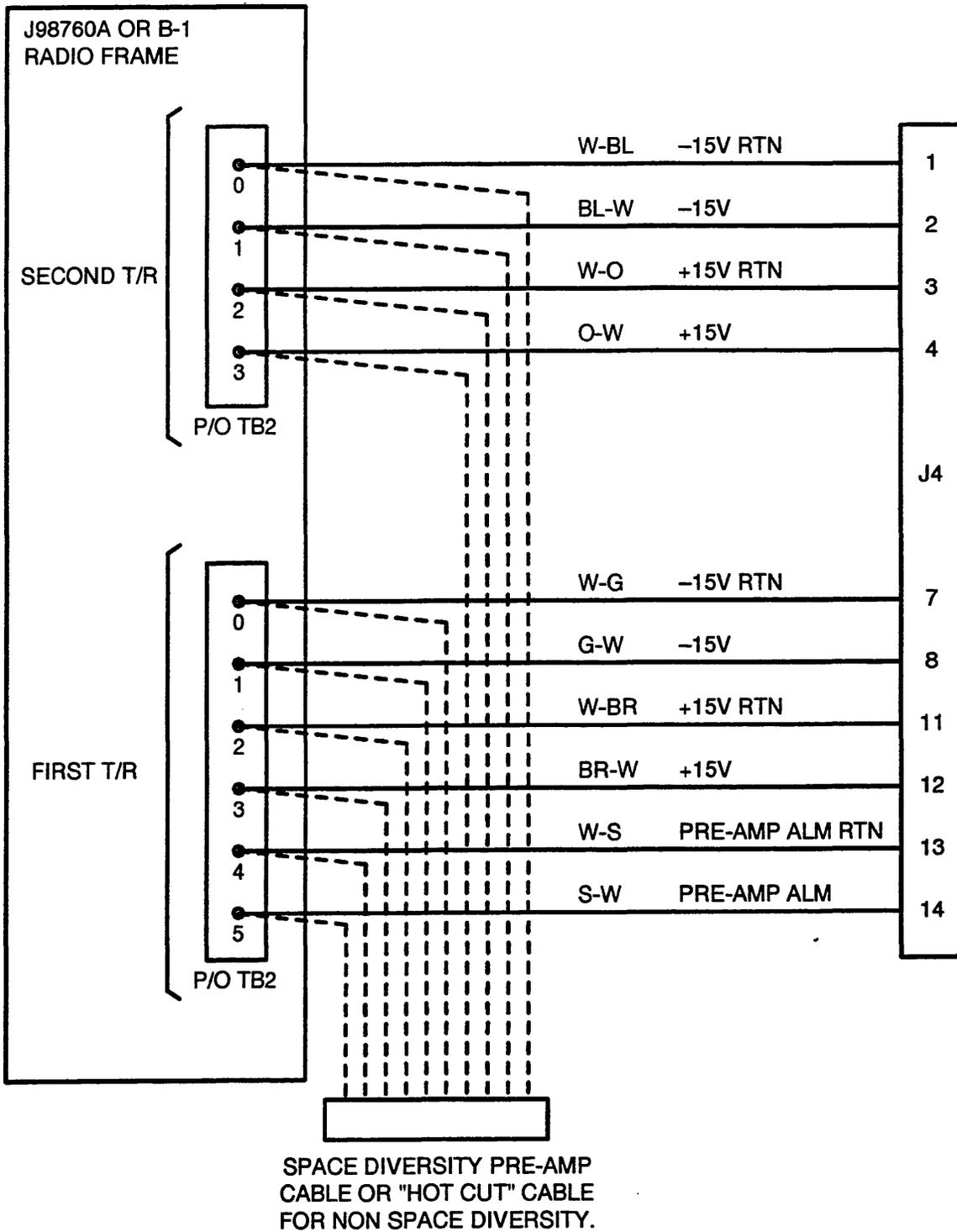


Figure 1—Typical RF Preamp Connections