INSTALLATION AND ALIGNMENT OF AN/TRC-145

31M

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9. If your system does not FRAME UP, you have a problem on your equipment. You must perform Loop-Back checks o n the equipment at your location.

10. After FRAME-UP, turn OFF Transmitter and Receiver.

11. Disconnect the CV-2500.

12. Reset the Receiver and Transmitter to the assigned channels.

13. Repatch the VIDEO PATCH PANEL for Radio Terminal configuration. (Figure 2).

14. Perform RADIO alignment procedures beginning on page 3.

TROUBLESHOOTING TIPS:

1. If you have "humming" on all channels and all TD-660 meter readings are good, you probably have a bad 11A1 PANEL.

2. If you have a Clicking/Buzzing/or Rushing sound on all channels, you probably have a bad KG-27.

3. If you have High reflect power readings, connect Dummy Load to the Receiver RF connector. If the readings are still bad, you have a bad Transmitter. If the reading is Normal, lower the Antenna, disconnect the 3-Foot Coax Cable and replace it with the Dummy Load. If the reading becomes Normal, replace the 3-Foot Coax   Cable. If the reading is still bad, check the 80-Foot Coax Cable and shelter connections.

CV-2500 LOOP-BACK:

1. Cable for LOOP-BACK as shown in Figure 4.

CV-2500 LOOP-BACK
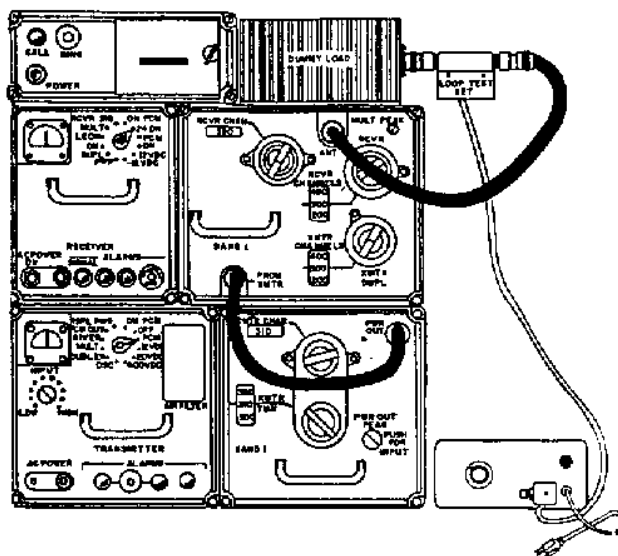
(Figure 4)

2. Set TRANSMITTER channel to 65, and RECEIVER channels to 115.

3. Set T-983 ON/OFF. Reset switch to OFF.

4. Set R-1329 ON/OFF. Reset switch to OFF.

5. Connect the CV-2500.

6. Cable VIDEO Patch Panel for Radio Terminal configuration. (See Figure 2).

7. Perform equipment Presets and Radio Alignment steps beginning on page 1.

8. If your systems FRAMES UP, the trouble is at the distant end.

INSTALLATION

EXTERIOR CHECK:

1. Check shelter ground.
2. Check generator ground, wiring, and level.
3. Check fire and fuel point.
4. Check that antennas are installed.

BEFORE INTERIOR CHECK:

1. Check that required publications are on hand.
2. Check that circuit routing (CRL) is on hand.
3. Check that systems diagram is on hand.
4. Check that KOK Cards are on hand.
5. Begin systems log, enter site arrival time and that you are using "Start Up Check List".
6. Adjust Generator output voltage for 120V reading on the Power Distribution Panel.

INTERIOR CHECK - EQUIPMENT PRESETS:

Set equipment circuit breaker to "OFF", lights circuit breaker to "ON", and main circuit breaker to "ON".

AN/GRC-103:

1. Set ON/OFF reset switch (2) to "OFF".
2. Set XMTR Channel Control to transmit channel.
3. Set XMTR Tune Control to transmit channel.
4. Set XMTR Dupl. Control to transmit channel.
5. Set RCVR Channel Control to receive channel.
6. Set RCVR Sig Control to receive channel.
7. Set INPUT (PCM) knob to low.
8. Set XMTR Meter Select switch to 12V.
9. Set RCVR Meter Select switch to 12V.

TD-660:

1. Set Power switch to "OFF".
2. Set MODE switch to "12CH".
3. Set 2 wire, 4 wire switch to "4W".
4. Set AUX. switch to "IN".
5. Set Master Slave switch to "Master".
6. Set Selector switches (1 through 4) to "OFF".

CV-1548/G:

1. Set the Power switch to "OFF".
2. Set the Selector switch to (-).
3. Set 2 wire, 4 wire switches in accordance with CRL. Set spare channels to 4 wire.
4. Set Signaling Mode switches on 18A3B panels in accordance with CRL. Set empty channels to "OFF".

TSEC/KG-27:

1. Set ON/OFF switch to "OFF".
2. Set Monitor switch to "ALARM".
3. Set KOK card in accordance with KEY LIST.

VIDEO PATCH PANEL:

Install in house loop-back patch as shown below.

LOOP BACK PATCH

(Figure 1)

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SYSTEM TROUBLESHOOTING INFORMATION

PCM RADIO LOOP-BACK:

1. Perform this check if one or both terminals do not FRAME-UP in the system.

2. Perform the patch for RADIO LOOP-BACK as shown in Figure 3.

(Figure 3)

3. After distant terminal FRAMES UP, patch your system for 12 CHANNEL RADIO TERMINAL configuration. (See Figure 1).

4. Tell the distant operator to place you in LOOP-BACK.

5. If your equipment FRAMES UP, the probable fault is distant terminal equipment.

6. The station that does not FRAME must perform CV-2500 LOOP BACK checks.

NOTE: **If there are REPEATERS in the system, LOOP-BACK TESTS will be performed at the REPEATER.**

TD-660:

1. Set 2 WIRE-4 WIRE CHANNEL switches in accordance with the CRL.

2. Set SELECTOR SWITCH III to MEAS.

3. Maintain operator contact on OW.

4. Adjust appropriate 11A26 PANEL on all CHANNELS for a HAIRLINE reading on meter. (Adjustments must be made simultaneously).

5. Talk on all 2W channels to ensure quality.

6. Log in CHANNEL 12 and inform Communications Control of Carrier to Carrier time.

7. If circuits are terminated, log the other channels and inform Communications Control of log times.

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ALIGNMENT

RADIO ALIGNMENT:

1. Set equipment circuit breaker to "ON".
2. Set XMTR ON/OFF reset switch to "ON".
3. Set RCVR ON/OFF reset switch to "ON".

NOTE: **The OW power lamp should light, when buzzers sound and LOW Signal, Power Lamp, Equipment Blowers are on, press the Buzzer OFF switch to silence alarm.**

TRANSMITTER:

1. Perform Voltage Check, set selector switch to:
    12V meter should read green
    28V meter should read green
    600V meter should read green

    NOTE: **If you receive an incorrect reading, you should reseat the transmitter case. If the reading is still incorrect, you must change transmitters. If readings are good, set selector switch to:**

    OSC should read 25 to 90
    DOUBLER should read 25 to 90
    MULT should read 25 to 90

2. Set Transmitter selector switch to DRIVER, push Power Out Peak Knob for a peak meter indication. If it doesn't adjust, transmitter I is bad.

3. Adjust XMTR Tune Control for a maximum meter indication.

4. Set XMTR selector control to PWR OUT. Pull Power Out Peak Knob for a peak meter reading. Low Power Lamp should go out.

NOTE: **If it doesn't adjust, transmitter Band I is bad.**

RECEIVER:

1. Set Receiver Selector switch to:
   +12V should read in the green

NOTE: **If reading is incorrect, change OW cable. If reading is still
incorrect, you must change the receiver. If reading is good,
continue with checks.**

   -12V should read green
   OSC should read 25 to 90

NOTE: **If reading is incorrect, you have a bad receiver.**

2. Check DOUBLER, should read 25 to 90. If incorrect reading you
   probably have a bad receiver or transmitter head.
3. Check XMTR DUPL, should read 25 to 90.
   Adjust XMTR DUPL control for a minimum reading on the XMTR and
   RCVR.

NOTE: **If reading is incorrect, check:**
Coax cables for water or defects
Dirty/loose connections
Receiver and Transmit head

4. Set RCVR selector switch to MULT and turn MULT PEAK knob for a
   peak meter reading.

5. Set the selector switch to RCV SIG. If you are receiving distant station,
   the Low Power lamp will go out.

ORDER WIRE:
1. Set receiver select switch to OW.
2. Press the Ring button and listen for 1600-Hz tone in handset. Receiver
   at distant station should indicate a green meter reading.

NOTE: **If not, you have a bad OW.**

3. Listen to OW. Rushing noise indicates that the distant end is not
   transmitting. If noise is present and low REC SIG lamp is on, the distant
   end is not up or had bad OW.

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AN/GRC-103:

1. Perform the following steps only if the channels are quiet in loop-back
   and OW contact with distant end has been established.

2. Set Transmitter selector switch to 12 CH PCM.

3. Set Receiver selector switch to 12 CH PCM.

4. Turn Transmitter INPUT knob for a meter deflection on the transmitter. If
   no deflection indication, you have a bad cable or transmitter case. If
   reading appears, turn INPUT knob to lowest readings.

5. Call distant terminal on OW. Tell operator your are going to send PCM.
   Make sure you OW is quiet before you proceed.

6. Adjust INPUT knob for a GREEN meter reading.

7. Call distant terminal on OW. Ask if the operator has received a GREEN
   reading on the receiver 12 CH PCM position.

8. Call distant terminal operator and repeat steps 5-7 for your system.

NOTE: **If the systems do not go into FRAME, see the
TROUBLESHOOTING chart.**

CHANNEL ALIGNMENT:

1. Recheck CV-1548 panel settings.

2. Recheck OSC on TD-660 for GREEN reading.

3. Call distant terminal and tell the operator to send TONE on CHANNEL 1
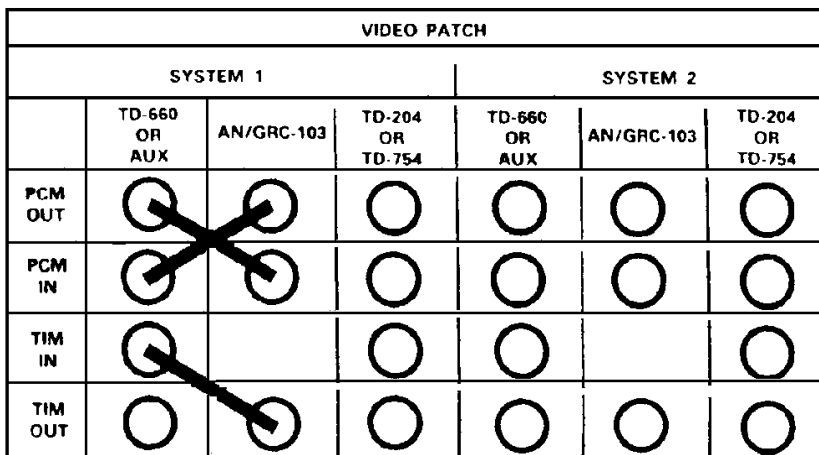   for alignment.

SYSTEM ALIGNMENT

VIDEO PATCH PANEL:

1. Patch for 12-channel radio terminal. FRAME ALARM should sound while patching.

NOTE: **Patch as shown in diagram.**

12 CHANNEL RADIO TERMINAL PATCH

VIDEO PATCH							
	SYSTEM 1			SYSTEM 2			
	TD-660 OR AUX	AN/GRC-103	TD-204 OR TD-754	TD-660 OR AUX	AN/GRC-103	TD-204 OR TD-754	
PCM OUT	◯	◯	◯	◯	◯	◯	
PCM IN	◯	◯	◯	◯	◯	◯	
TIM IN	◯	◯	◯	◯		◯	
TIM OUT	◯	◯	◯	◯	◯	◯	

(Figure 2)

ANTENNA SYSTEM:

1. Call distant operator on the OW and state you are ready to orient the antenna.
2. Orient antenna for maximum RCVR SIG on receiver meter.
3. Lower antenna until RCVR SIG starts to drop. Relays will keep antenna at 35 feet. Terminals have no minimum antenna height.

   NOTE: **To orient antenna, you must be receiving the distant end.**

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IN-HOUSE LOOP-BACK CHECK:

CV-1548/G:

1. Set power switch to ON, Amber lamp should light.

NOTE: **If lamp doesn't light, you have a bad bulb or 1/2 amp fuse.**

2. Set Selector switch to:

POSITION	READING	PROBABLE CAUSE
−	Yellow	1/2 amp fuse or 18A1
+	Yellow	1/2 amp fuse or 18A1
20-	Yellow	18A2
20	Yellow	18A2
1600	Hairline	1600 Hz adjustment

TD-660: Set power switch to ON. Push button to silence Frame Alarm.

TSEC/KG-27:

1. Check to ensure "KOK" cards are the same type (NSA or GOVERNMENT).
2. Insert "KOK" cards into the permuter trays.

NOTE: **Do NOT lock doors.**

3. Set ON/OFF/RESET switch to ON, green indicator lamp should light and the TD-660 Frame Alarm should go out.

4. Set Monitor Alarm switch to the following positions and check for green meter readings:
ALARM
4VB
12V
-6V
4VR
-10V

NOTE: **If you get an inappropriate reading, check the fuse. If all readings are bad, check the lamp bulb.**

5. Set the Monitor switch to the following positions and check for a green reading:

TRANSMIT TIM
TRANSMIT PCM
TRANSMIT FRAME
REC TIM
REC PCM
REC FRAME

TD-660 A/G:

1. Set Power switch to ON. Frame Alarm should sound. Push button to silence.
2. Operate Selector switch 1 to obtain voltage check. For incorrect readings, check applicable fuse and/or 11A1 panel.

POSITION	READING	FUSE
+7	Yellow	1 1/2 amp
**+12	Hairline	1 1/2 amp
+4	Green	3 amp
-12	Green	1 1/2 amp
-6	Green	1/2 amp
-4	Green	3/4 amp

NOTE: **If +12 is still incorrect, adjust +12 control.**

3. Operate Selector switch 1 to obtain signal check.

POSITION	READING
PCM IN	Green
TIM IN	Green
SYNC IN	Green
PCM FROM AUX	Green

NOTE: **If incorrect reading, see troubleshooting procedures.**

4. Check NOISE GEN for a Yellow reading. If incorrect, you have a bad 11A29 panel.

5. Set Selector switch I to SW II and operate Selector Switch II to check the following positions:

POSITION	READING	PROBABLE FAULT
A	Green	11A23/11A24
B	Green	11A24
C	Green	11A23
D	Green	11A24
**E	Green	11A26
F	Green	11A25 (CCL)
G	Green	
H	Green	11A28/11A29
**J	Green	11A27
**K	Green	11A28
**L	Green	11A27
OFF	--------	-----------------

NOTE: ****Will read green only if TD-660 is out of frame and searching.**

NOTE: **You must receive permission from your OIC or NCOIC to change panels.**

6. Set Selector Switch to SW III and Selector Switch III to OSC. You should have a green reading. If not, 11A29 panel is bad.

7. Set Selector Switch III to TALK. Check all channels on the TD-660. If you have noise on channels, check KOK cards. Do not proceed to the next step until all channels are quiet.