83B1 SELECTIVE CALLING SYSTEM

CONTROL CIRCUIT FOR 14G REPERFORATOR-TRANSMITTERS

AT AUTOMATIC RELAY STATION

CONTENTS PAGE

1. GENERAL

1.01 This issue supersedes Issue A and is reissued to correct the test procedure originally covered in Part 6.

1.02 This section describes and lists tests for the Control Circuit for 14G Reperforator-Transmitters at an Automatic Relay Station.

1.03 The equipment consists of two control circuits for a pair of reperforator-transmitters.

1.04 The circuitry provides for automatic relay at a location common to two 83B1 TTY Selective Calling Systems as shown in Fig. 1.

2. FUNCTIONS

2.01 ***Perforated Tape:*** Provides perforated tape in response to signals coming from the station control circuit of an 83B1 system.

2.02 ***Machine Alarm:*** Operates if the reperforator fails to respond to incoming signals.

2.03 ***Bid (Request to Send):*** "Bids" when tape is available in the R-T bin.

2.04 ***Transmitter Start:*** Starts transmitter when station control circuit recognizes the assigned Transmitter Start Code (TSC)

2.05 ***Torn Tape:*** Stops transmitter, releases the bid, and operates alarm if sixth pin detects torn tape.

2.06 ***Tape Supply:*** Operates alarm when supply of tape on reel is low.

2.07 ***Manual Transmitter Stop:*** Provides key for maintenance man to stop transmitter manually.

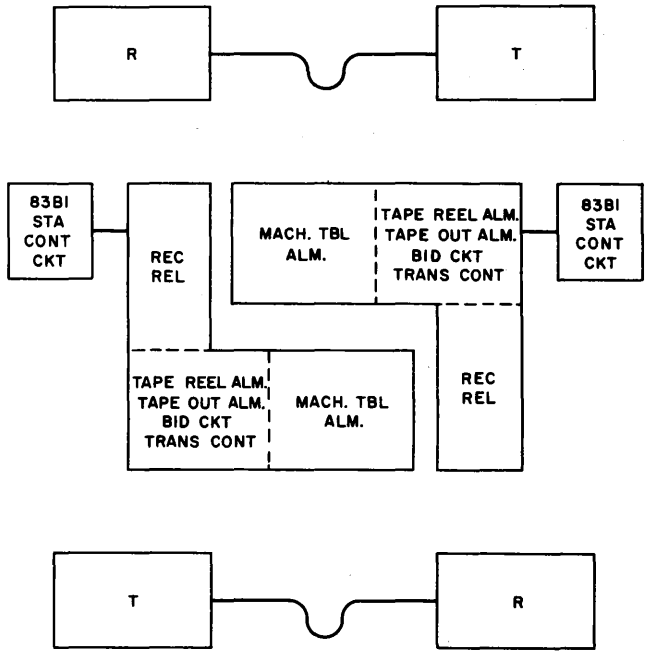

Fig. 1

3. DESCRIPTION

3.01 When the 83B1 Station Control Unit recognizes it Call Directing Code (CDC), it unblinds the receive relay of the associated reperforator which is now ready to receive the message.

3.02 As the tape starts feeding into the bin a "bid" is initiated to the other station control unit.

3.03 Upon receipt of its TSC, the transmitter associated with the second line starts sending.

4. CONNECTING CIRCUITS

4.01 SD-70832-01-83B1 Teletypewriter Selective Calling System — Station Control Circuit.

5. DEFINITIONS AND ABBREVIATIONS

5.01 ***Automatic Relay Station:*** Any point common to two 83B1 systems where relay traffic is required.

6. TESTS

6.01 To test the operation of the control circuit, the same procedure is followed as used in testing an 83B1 station except that the receive and transmit portions are done on two lines.

6.02 Coordination between the serving toll test center and the repairman at the Customers location is necessary for most of the tests.

Normal Operation Tests

6.03 When testing the normal operation of station equipment, proceed as follows.

(a) Terminate each loop at the testroom.

(b) The CDC must be sent by keyboard because of the "V" answer-back feature.

(c) If tests are being made at a master station, the transmitter start arrangement of both circuits should be turned off.

(d) Using a KSR on circuit A, send FIGS H LTRS to insure that stunt boxes are in select condition.

(e) Send LTRS LTRS LTRS and CDC of R-T that relays copy to circuit B.

(f) There should be no answer-back.

(g) Send verification code.

(h) "V" answer-back should be received, indicating that the R-T is conditioned to receive text.

6.04 ***Send <≡ text:*** The text can be sent keyboard or with an automatic transmitter. End the text with H

6.05 The tape is now awaiting transmission to circuit B. Test transmission to circuit B as follows.

(a) Transfer the KSR to circuit B and send FIGS H LTRS.

(b) Send FIGS H LTRS.

(c) Send TSC for RT involved.

(d) "V" answer-back should be received.

(e) Send the TSC for RT under test.

(f) Transmitter should start.

(g) Copy should be received on circuit B.

(h) Received copy on circuit B should start with verification code.

6.06 Repeat tests in 6.03 through 6.05 in the opposite direction.

(a) Detailed description follows as an aid in trouble investigation. Inverse neutral signals will be received on the RC lead from the station control circuit when the RC relay of that circuit has responded to its assigned CDC. The 2-7 winding of L1 is biased at 30 ma to permit an operating current of 60 ma as specified in "D" option of the station control circuit.

(b) When the reperforator starts to feed tape into the bin, the TRANS STOP contacts will close, applying ground to the TA lead and operating the BD relay. The BD relay will in turn apply ground to the ASC lead to initiate a "bid" to the station control circuit.

(c) When the station control circuit recognizes its TSC, DS relay will operate grounding the ACT lead which will in turn operate TC relay. Relay TC has its contacts directly in the operate path of the transmitter clutch release magnet and therefore starts or stops the transmitter.

Machine Alarm

6.07 Resend text in each direction as in normal operation.

6.08 Turn off reperforator switch during transmission.

(a) The visual (ALM lamp) and audible (buzzer) alarms will operate.

6.09 Operate the BCO key to silence the audible alarm.

(a) The operation of the BCO key will also light the BCO guard lamp.

6.10 Turn on reperforator switch.

6.11 Operate the REL key to restore alarm to normal.

(a) A machine trouble alarm circuit consists of MT varistor, M, A1, A2, A3, B1, B2, B3 relays, capacitors, and MT relay. In the idle marking condition, L1 relay will maintain M capacitor in an essentially discharged state. During the reception of spacing signals however, M capacitor will be charged through MT varistor to positive 120V. This positive charge will in turn tend to charge A and B capacitors through A1 and B1 resistors. Normally the reperforator will respond to the incoming signals and its mechanical action will cause the universal contacts to apply ground alternately on U and V leads; A and B capacitors will therefore be kept discharged. If, however, the universal contacts fail to operate or if the tape feed indicator contacts open, the charge on A or B capacitor will be permitted to rise until it is high enough to trigger A or B electron tube. When either electron tube fires, current will flow to operate MT relay which:

(1) Locks through its 1-2B to the REL key.

(2) Opens the cathode circuit of the electron tubes (1-3B).

(3) Lights the ALM lamp (1-2T).

(4) Sounds the buzzer (3-4T).

Emergency Stop

6.12 Make test in each direction. Start transmission with TSC as covered in 6.05.

6.13 Operate the EMER STOP key.

(a) The transmission will stop, the visual (ALM lamp) alarm and audible (buzzer) alarm will operate.

6.14 Operate the REL key.

(a) Operation of the REL key will restore alarms to normal and permit the transmitter to be restarted.

6.15 Description of EMERGENCY STOP alarm circuit follows:

(a) The contacts of this key are wired in parallel with the TAPE OUT (sixth pin). Momentary operation will apply ground on the SP lead to operate the SP relay.

(b) The SP relay opens the operate path of the transmitter clutch release magnet (contacts 4 and 5) and operates the TO relay (contacts 1 and 2). Relay TO operating:

(1) Locks through its 5-6T to the REL key.

(2) Further, opens the operate path of the transmitter clutch release magnet (1-2T).

(3) Lights the ALM lamp (3-4T).

(4) Sounds the buzzer (3-4B). Momentary operation of the REL key will unlock the TO relay, releasing the alarm and restarting the transmitter.

Torn Tape or Tape Out Alarm

6.16 Tests should be made in each direction.

(a) Simulate, a torn tape or tape out condition during transmission. (This can be done by lifting the tape latch lid.)

(b) The visual (ALM lamp) alarm and audible (buzzer) alarm will operate.

6.17 Operate the BCO key to silence the audible alarm.

(a) The operation of the BCO key will also light the BCO guard lamp.

6.18 Insert remaining portion of tape with End-of-Message Code (EOM).

(a) This will restore transmitter to normal operation.

(b) Alarm circuit is described in 6.15.

Low Tape Supply

6.19 To test low tape supply alarm, remove tape from reel allowing tape real contacts to close operating the TR relay. ALM lamp will light (1-2T) and sound the buzzer (3-4T).

7. REFERENCES

7.01 The following are drawings related to this section.

EA-11479-SD-ED-T — Auto-Relay Control Ckt

EA-11479-CD — Auto-Relay Control Ckt Description