83B2 TELETYPEWRITER SELECTIVE CALLING SYSTEM SINGLE LINE INTERCEPT CIRCUIT PSD-70032-01 TEST INFORMATION

1. GENERAL

1.01 This section is the second in a series of sections dealing with the single line intercept unit for use with 83B2 Teletypewriter Selective Calling Systems. It describes the tests necessary to place the equipment in a condition for service. A series of first and second stage tests are required.

1.02 First stage tests are made using only the control station equipment terminated in a 60- to 65-milliampere test loop. A nonselective, sending and receiving, full printing, tape or page, teletypewriter is recommended for monitoring purposes.

1.03 Second stage tests are "over-all" 83B2 System tests made before the system is put in service. Monitoring equipment is the same as Par. 1.02.

2. WESTERN ELECTRIC DISTRIBUTING HOUSE TESTS

2.01 First stage tests, as outlined in 1.02, should be made by the W.E.CO. whenever a new or reconditioned control station equipped with intercept is supplied.

2.02 The associated teletypewriter equipment shall be adjusted and tested in accordance with standard Bell System Practices and any related instructions.

3. FIRST STAGE TESTS - EQUIPMENT CONNECTIONS

3.01 Paragraphs 3.02 through 3.05 describe the steps necessary to remove the intercept unit so that it will not interfere with the 83B2 System under test.

3.02 Disconnect the "B" cord which connects the intercept unit to the station control unit at the control unit end.

3.03 Disconnect the "B" cord that comes from the pushbutton or transmitter start unit at the intercept unit end and connect it to the station control unit socket cleared in 3.02.

3.04 Disconnect the "E3" cord from the pushbutton or transmitter start unit.

3.05 Disconnect the "E1" or "E2" cord from the intercept unit and connect it to the pushbutton or transmitter start unit socket, cleared in 3.04.

4. TESTING THE NORMAL 83B2 CIRCUITS

4.01 The 83B2 control station shall be tested in accordance with existing procedures or practices.

4.02 Modifications made in the J70125A station control, J70125F or J70125G key and lamp cabinets and the No. 28 AFG stuntbox do not affect normal operation of the 83B2 System when the intercept unit is disconnected, but eliminate the functions of the MR key in the key and lamp cabinet.

4.03 If pushbutton equipment is used, the modification called for in Note 303, PSD-70032-01, will cause three LTRS to be sent to the line ahead of the first CDC. This may be checked on the full printing monitor copy. This feature may be eliminated by removing XD Option in the pushbutton equipment (see Note 303, A & H, PSD-70032-01, Sheet D2).

4.04 After the 83B2 control station has been completely tested and all trouble cleared, reverse the procedure given in 3.02 through 3.05 and in 4.03, if the strap has been removed. This will reconnect the intercept unit to the 83B2 circuit.

5. TESTING THE INTERCEPT UNIT

5.01 If, during a test, the results obtained do not agree with this specification, examine the particular circuit, make corrections if necessary, and repeat the test.

5.02 Provide XA Option and, if required, ZP Option in the intercept unit; provide XD Option in the pushbutton equipment, if used. See Note 102, PSD-70032-01, for details on these options.

5.03 Operate the SK keys of the transmitter start key and lamp cabinet for all stations except the control station.

5.04 Turn on the AC power for the entire station including the No. 28 intercept ROTR.

5.05 The IC lamp will light and the alarm buzzer operate. This is a normal condition whenever the AC power is first turned on.

5.06 Operate the IAR key. This will silence the buzzer and extinguish the IC lamp.

5.07 The MON (Monitor) key shall be in its normal (nonoperated) position.

5.08 The transmitter start unit will send FIGS H LTRS to clear the system.

5.09 The transmitter start unit will send the control station TSC's repeatedly and the station will send the V answer-back.

5.10 The TCS's and associated V answer-backs will not be typed or punched in the tape of the No. 28 ROTR intercept unit but will appear on the line monitor.

5.11 Assuming that the control station CDC is AA, prepare the following test tape:

10 LTRS AA LTRS CR LF LTRS TEST TAPE NO. 1 RY's (one line) CR LF FIGS H LTRS 10 LTRS

5.12 Whether the station has pushbutton control or not, place the tape prepared in the control station transmitter so that at least three LTRS will be sent before the CDC. Do not operate any pushbutton key.

5.13 The transmitter will start in the normal manner and send the tape; RY's will be typed by the control station and the line monitor will print the CDC and the RY's as well.

5.14 The tape on the intercept ROTR will look like this:

LTRS ? LTRS AA LTRS CR LF LTRS (at least 1 inch of LTRS)

Note: The symbol "LTRS ? LTRS" indicates an unknown number of LTRS.

5.15 If the V is printed after the CDC, first check if XB Option is being used; if so, remove it and repeat the test.

5.16 If the V is still printed, make the test called for in Note 308, PSD-70032-01, and clear the trouble. With XB Option removed, the V should never be printed after the CDC.

5.17 Using the control station CDC - assume AA - and any other valid or non-valid CDC - assume AB - prepare the following test tape:

10 LTRS AA LTRS AB LTRS CR LF TEST TAPE NO. 2 RY's (one line) CR LF FIGS H LTRS 10 LTRS

Proceed as in 5.12; the results are the same as in 5.13.

5.18 Since there is no other station on the line, a V answer-back will not be received after the second CDC is sent. The transmitter will stop for about 4 seconds, the IC lamp will light, the alarm buzzer will operate, and the intercept unit will send "TTV" to the line.

5.19 The V following the TT will cause the transmitter to restart and send the rest of the test tape.

5.20 The copy on the line monitor will be:

LTRS ? LTRS AA LTRS VAB LTRS TTV CR LF LTRS TEST TAPE etc...

5.21 At the control station the copy will be:

AB LTRS TTV CR LF TEST TAPE NO. 2 etc...

5.22 The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS AB LTRS TT CR LF TEST TAPE NO. 2 etc...

5.23 Operate the IAR key. This will extinguish the IC lamp and retire the alarm buzzer.

5.24 Using the control station CDC - again assume AA - and any other two CDC's - assume AB and AC - prepare the following test tape:

10 LTRS AA LTRS AB LTRS AC LTRS AA LTRS CR LF LTRS TEST TAPE NO. 3 RY's (one line) CR LF FIGS H LTRS 10 LTRS

Proceed as in 5.12; the results are as in 5.13.

5.25 The copy on the line monitor will be:

LTRS ? LTRS AA LTRS VAB LTRS TTVAC LTRS TTVAA LTRS "V" CR LF LTRS etc...

The copy on the control station unit will be:

VAB LTRS TTVAC LTRS TTVAA LTRS "V" CR LF LTRS etc...

The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS AB LTRS TTAC LTRS TTAA LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The alarm buzzer will operate. Proceed as in 5.23.

5.26 Assuming that AB is a nonvalid code, prepare the following test tape:

10 LTRS AB LTRS CR LF LTRS TEST TAPE NO. 4 RY's (one line) CR LF FIGS H LTRS 10 LTRS

Proceed as in 5.12; the results are as in 5.13.

5.27 The copy on the line monitor will be:

LTRS ? LTRS AB LTRS TTV CR LF LTRS TEST TAPE etc... FIGS H LTRS 10 LTRS

The control station unit will <u>not</u> receive this test tape. The copy on the intercept ROTR will be:

LTRS ? LTRS AB LTRS TT CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The alarm buzzer will operate. Proceed as in 5.23.

5.28 If the control station is equipped with pushbutton equipment, place tape No. 1 in the transmitter and operate the PB key for the control station. Its CDC again is assumed to be AA.

5.29 The copy on the line monitor will be:

LTRS LTRS LTRS AA LTRS V CR LF LTRS ? LTRS AA LTRS CR LF LTRS TEST TAPE No. 1 etc...

The copy on the control station will be:

CR LF LTRS ? LTRS AA LTRS CR LF LTRS TEST TAPE etc...

The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS CR LF LTRS (at least 1 inch of LTRS)

The alarm buzzer will not operate.

5.30 If the tape received on the intercept ROTR in 5.29 looks like this:

LTRS CR LF LTRS (at least 1 inch of LTRS), it shows that the pushbutton unit is not sending the three LTRS before the first CDC. Check Notes 303, E & H, in PSD-70032-01, to see that the straps are in place.

5.31 Place test tape No. 2 in the transmitter and operate the pushbutton keys to produce the same codes as in the tape.

5.32 Assuming that CDC's AA and AB are used in test tape No. 2, the copy on the line monitor will be:

LTRS LTRS LTRS AA LTRS VAB LTRS TTV OR LF LTRS ? LTRS AA LTRS AB LTRS CR LF LTRS TEST TAPE NO. 2 RY's CR LF FIGS H LTRS LTRS

The copy on the control station unit will be:

AB LTRS TTV CR LF LTRS ? LTRS AA LTRS AB LTRS CR LF LTRS TEST TAPE etc...

The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS AB LTRS TT CR LF LTRS LTRS ? LTRS AA LTRS CR LF TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The buzzer alarm will operate. Proceed as in 5.23.

5.33 Repeat the tests given in 5.12, 5.17, 5.24, 5.26, 5.28, and 5.31 at least six (6) times each at the time of the initial installation.

6. MANUAL CROSS-OFFICE TESTS

6.01 If the order calls for the intercept unit to be used jointly as an intercept and manual cross-office ROTR (see Note 110 in PSD-70032-01), perform the following tests:

6.02 Assuming that the control station CDC is AA and taking YW as the cross-office CDC assigned in Note 110, prepare the following test tape:

10 LTRS AA LTRS YW LTRS CR LF LTRS TEST TAPE NO. 5 RY's (one line) CR LF FIGS H LTRS 10 LTRS

6.03 Whether the station is equipped with or without pushbutton equipment, place tape No. 5 in the control transmitter so that at least three LTRS will be sent before the CDC's. Do not operate any push-button key.

6.04 The copy on the line monitor will be:

LTRS ? LTRS AA LTRS VYW LTRS V CR LF LTRS TEST TAPE NO. 5 etc...

The copy on the control station unit will be:

YW LTRS V CR LF LTRS TEST TAPE NO. 5 etc...

The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS YW LTRS CR LF LTRS TEST TAPE NO. 5 etc... FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will <u>not</u> alarm.

6.05 Assuming that YW is the cross-office CDC, prepare the following test tape:

10 LTRS YW LTRS CR LF LTRS TEST TAPE NO. 6 RY's (one line) CR LF FIGS H LTRS 10 LTRS

6.06 Place this tape in the control station transmitter - do not operate any pushbutton key.

6.07 The copy on the line monitor will be:

LTRS ? LTRS YW LTRS V CR LF LTRS TEST TAPE etc...

No copy will be received on the control station unit. The copy on the intercept ROTR will be:

LTRS ? LTRS YW LTRS CR LF LTRS TEST TAPE NO. 6 RY's (one line) CR LF FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will not alarm.

6.08 Assuming that AA is the control station CDC, AB a nonvalid CDC, and YW the cross-office CDC, prepare the following test tape:

10 LTRS AA LTRS AB LTRS YW LTRS CR LF LTRS TEST TAPE NO. 7 RY's (one line) CR LF FIGS H LTRS 10 LTRS

Do not operate any pushbutton key.

6.09 The copy on the line monitor will be:

LTRS ? LTRS AA LTRS VAB LTRS TTVYW LTRS V CR LF LTRS TEST TAPE etc...

The copy on the control station unit will be:

AB LTRS TTVYW LTRS V CR LF LTRS TEST TAPE etc...

The copy on the intercept unit will be:

LTRS ? LTRS AA LTRS AB LTRS TTYW LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will alarm. Proceed as in 5.23.

6.10 If the control station is equipped with pushbutton equipment, place tape No. 5 in the transmitter and operate the PB keys for the control station and for the cross-office. Assume the control station CDC to be AA and the cross-office CDC YW.

6.11 The copy on the line monitor will be:

LTRS LTRS LTRS AA LTRS VYW LTRS V CR LF LTRS ? LTRS AA LTRS YW LTRS CR LF LTRS TEST TAPE etc...

The copy on the control station unit will be:

YW LTRS V CR LF LTRS ? LTRS AA LTRS YW LTRS CR LF LTRS TEST TAPE etc...

The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS YW LTRS CR LF LTRS ? LTRS AA LTRS YW LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The intercept will not alarm.

6.12 Place test tape No. 6 in the transmitter and operate the PB key to obtain the same codes as in the tape.

6.13 The copy on the line monitor will be:

LTRS LTRS LTRS YW LTRS V CR LF LTRS ? LTRS YW LTRS CR LF LTRS TEST TAPE NO. 6 etc...

No copy will be received on the control station unit.

The copy on the intercept unit will be:

LTRS ? LTRS YW LTRS CR LF LTRS ? LTRS YW LTRS CR LF LTRS TEST TAPE NO. 6 etc... FIGS H LTRS (at least 1 inch of LTRS)

There will be no alarm.

6.14 Place test tape No. 7 in the transmitter and operate the PB keys to obtain the same codes as in the tape.

6.15 The copy on the line monitor will be:

LTRS LTRS LTRS AA LTRS VAB LTRS TTVYW LTRS V CR LF LTRS ? LTRS AA LTRS AB LTRS YW LTRS CR LF LTRS TEST TAPE etc...

The copy on the control unit will be:

AB LTRS TTVYW LTRS V CR LF LTRS ? LTRS AA LTRS AB LTRS YW LTRS CR LF LTRS TEST TAPE etc...

The copy on the intercept ROTR will be:

LTRS ? LTRS AA LTRS AB LTRS TTYW LTRS CR LF LTRS ? LTRS AA LTRS AB LTRS YW LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will alarm. Proceed as in 5.23.

7. CARRIAGE RETURN BEFORE CDC - TESTS

7.01 The pushbutton equipment will not be used during this test.

7.02 Assume that the control station CDC is AA and prepare the following test tape:

10 LTRS CR LF LTRS AA LTRS CR LF LTRS TEST TAPE NO. 8 RY's (one line) CR LF FIGS H LTRS 10 LTRS

7.03 Place this tape in the transmitter so that at least three LTRS will be sent before the CR.

7.04 The copy on the line monitor will be:

LTRS ? LTRS CR LF LTRS AA LTRS CR LF LTRS TEST TAPE etc...

Nothing will be printed on the control station unit. The copy on the intercept ROTR will be:

LTRS ? LTRS CR LF LTRS AA LTRS CR LF LTRS TEST TAPE NO. 8 RY's CR LF FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will alarm. Proceed as in 5.23.

7.05 Assume that the control station CDC is AA and prepare the following test tape:

10 LTRS CR AA LTRS CR LF LTRS TEST TAPE NO. 9 RY's (one line) CR LF FIGS H LTRS 10 LTRS

7.06 When this tape is sent, the copy on the line monitor will be:

LTRS ? LTRS CR AA V LTRS CR LF LTRS TEST TAPE etc...

The control station unit will print:

V LTRS CR LF LTRS TEST TAPE etc...

The intercept ROTR will print:

LTRS ? LTRS CR AA LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will alarm.

7.07 The tape sent in 7.06 will be delivered to the station or stations provided all CDC's are valid and all selected stations give their V answer-back. This message was intercepted but not marked with "TT".

7.08 Prepare the following test tape:

10 LTRS CR LTRS AA LTRS CR LF LTRS TEST TAPE NO. 10 RY's (one line) CR LF FIGS H LTRS 10 LTRS

7.09 When this test tape is sent, the copy on the line monitor will be:

LTRS ? LTRS CR LTRS ATTVA LTRS CR TTV LF LTRS SPACE TTVTESTTVT SPACE TTTVAPETTV SPACE etc... through the complete message. Nothing will be printed on the control station unit unless somewhere AA is transmitted sequentially. The copy on the intercept ROTR will be just the same as that printed on the line monitor except for the V's. The intercept ROTR will alarm.

7.10 Prepare a test tape as follows:

10 LTRS A CR LTRS AA LTRS CR LF LTRS TEST TAPE NO. 11 RY's (one line) CR LF FIGS H LTRS 10 LTRS

7.11 When this tape is sent, the copy on the line monitor will be:

LTRS ? LTRS A CR LTRS TTVAA LTRS V CR LF LTRS TEST TAPE etc...

The control station will print:

V CR LF LTRS TEST TAPE etc...

The intercept unit will print:

LTRS ? LTRS A CR TTAA LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The intercept unit will alarm.

8. MISCELLANEOUS TESTS

8.01 Remove XA Option from the intercept unit.

8.02 Repeat the test given in 5.25. Use test tape No. 3.

8.03 The copy received on the intercept ROTR will be:

LTRS ? LTRS TTAC LTRS TTAA LTRS CR LF LTRS TEST TAPE etc... FIGS H LTRS (at least 1 inch of LTRS)

The buzzer alarm will operate.

8.04 Replace XA Option and temporarily add XB Option to the intercept unit.

8.05 Repeat the test given in 5.25. Use test tape No. 3.

8.06 The copy received on the intercept ROTR will be:

LTRS ? LTRS AA LTRS VAB LTRS TTVAC LTRS TTVAA LTRS V CR LF LTRS TEST TAPE NO. 3 etc... FIGS H LTRS (at least 1 inch of LTRS)

The buzzer alarm will operate.

8.07 Remove XB Option unless it is called for on the order.

9. SECOND STAGE TESTS - OVER-ALL LINE TESTS (SEE 1.03)

9.01 Remove the intercept unit as described in 3.01 through 3.05.

9.02 The over-all 83B2 System shall be tested in accordance with existing procedures or practices.

9.03 If the pushbutton equipment is used, the modification called for in Note 303, PSD-70032-01, will cause it to send three LTRS to the line before it sends the first CDC. This may be checked on the full printing monitor copy. This feature may be eliminated by removing XD Option in the pushbutton units. See Note 303, A & H, PSD-70032-01, Sheet D2.

9.04 After the 83B2 System has been completely tested and all troubles have been cleared, reverse the procedure given in 3.02 through 3.05. This will connect the intercept unit to the circuit ready for test.

10. TESTING THE INTERCEPT UNIT WHEN ASSOCIATED WITH THE LINE

10.01 If during the following tests, the results obtained do not agree with this specification, correct the trouble and repeat the test.

10.02 Orientation and distortion tests shall be made on the No. 28 ROTR in accordance with BSP P30.002.

10.03 Operate the VS key of the transmitter-start control key and lamp cabinet to the SP position. This will prevent the unit from sending TSC's.

10.04 The serving toll testroom for the control station should send a non-valid CDC to the line from an S&R monitor. This will connect the intercept ROTR. Assuming that ZZ is the nonvalid CDC chosen, they should send the following:

LTRS LTRS LTRS ZZ LTRS (wait for TTV answer-back) CR LF LTRS and at this point apply the source of test signals.

10.05 When the optimum for the ROTR has been established, the toll testroom should remove the source of test signals and send FIGS H LTRS from an S&R monitor to disconnect the intercept unit.

10.06 Assuming that the control station CDC is AA and that the other station CDC's are AB, AC, AD, and AE, with ZZ as a nonvalid CDC, have each station on the line prepare two test tapes. For example, station AB would prepare the following test tapes:

10 LTRS AB LTRS AA LTRS CR LF LTRS AB TEST TAPE NO. 1 CR LF FIGS H LTRS 10 LTRS

10 LTRS AB LTRS ZZ LTRS AA LTRS CR LF LTRS AB TEST TAPE NO. 2 CR LF FIGS H LTRS 10 LTRS

10.07 Whether pushbutton equipment is used or not, have all stations place tape No. 1 in their transmitters so that at least three LTRS are sent to the line before the first CDC. Repeat this procedure several times before test tape No. 2 is used.

10.08 At the control station, place the VS key that was operated in 10.03 in its normal position. The transmitter start unit should start sending TCS's. See CD-70832-01 for details on the VS key.

10.09 Test message No. 1 should be received at the control station but should not be intercepted. The tape on the intercept ROTR should look like this:

LTRS ? LTRS AB LTRS AA LTRS CR LF LTRS (at least 1 inch of LTRS) AC LTRS AA LTRS CR LF LTRS (at least 1 inch of LTRS) AD LTRS AA LTRS CR LF LTRS (at least 1 inch of LTRS) AE LTRS AA LTRS CR LF LTRS (at least 1 inch of LTRS)

10.10 If any station fails to send at least three LTRS before its first CDC, the intercept ROTR will print only part of that CDC (clipping). If station AD is the offender, its copy on the ROTR will look like this:

LTRS ? LTRS D LTRS AA LTRS CR LF LTRS etc... (clipped)

LTRS ? LTRS AA LTRS CR LF etc... (clipped)

10.11 Repeat 10.07; use tape No. 2.

10.12 The complete test message should be received at the control station and on the intercept unit as well.

10.13 Using test tape No. 1 work individually with each station equipped with pushbutton equipment. Have the station place test tape No. 1 in its transmitter and operate the pushbutton keys corresponding to the CDC's in the tape.

Note: It is assumed that the intercept has been tested according to Step 1. At this time, just make sure that the pushbutton equipment sends the three LTRS before the first CDC.

10.14 If clipping of the first CDC appears on the intercept ROTR (see 10.10), it shows that the pushbutton equipment either is not modified to send the three LTRS, or possibly that XD Option has not been applied.