TEST OF ORIGINATING SENDER TEST FRAME

AND SENDER MAKE BUSY FRAME

1. GENERAL

1.1 Description of Test: This section describes a method of checking certain trouble detecting features of the originating sender test frame for:

KEY PULSING SENDERS (FULL SELECTOR)
KEY PULSING SENDERS (PCI CALL)
SUBSCRIBER SENDERS (PCI CALL)
TEST AND MB FRAME (MISC.)

1.2 Test Procedure: These tests should be made before the routine tests are made on the originating senders.

1.3 Refer to Section 161 for information on setting up test calls, lamp indications and other general information.

2. TEST OF TEST FRAME TROUBLE CHECKING FEATURES (KEY PULSING SENDERS)

2.1 Key Pulsing Circuit -0123

2.11 Release Test TS Relay: Temporarily strap out both windings of resistance (BH) 6000 ohms of this circuit. Set up digits 3030 on the TH, H, T & U keys, respectively. Operate TRT key and originate a full selector call. Observe that the test circuit blocks. Release the TRT key, momentarily operate the CA key and observe that the call completes satisfactorily.

2.12 Release Test RS Relay: Strap out both windings of (BH) 6000 ohm resistance. Set up digits 9191 on TH, H, T and U keys, respectively. Operate RRT key and originate a full selector call. Observe that the test circuit blocks. Remove cross from (BH) resistance, momentarily operate CA key and observe that test call completes satisfactorily.

2.13 Check of Key Release (KRA) Relay

Temporarily strap out resistance (B) 620 ohms of this circuit. Originate a full selector crossbar call on a key pulsing sender and note that the test circuit blocks with the KP switch in position 16. Remove strap from resistance B, reoriginate the call and observe that it is completed satisfactorily.

2.14 Test for False Grounding of DC Lead on a Call Direct to an Incoming Trunk (Key Pulsing Sender)

Block relay DC of this circuit operated. Operate class key 1 and keys DSS, REP and 2-INC. Set up any four digits on the TH, H, T and U keys and operate the ST key. Observe that the test circuit blocks with the KP selector of the Key Pulsing Circuit blocked in position 2. Remove block from the DC relay. Repeat the test and observe that it completes satisfactorily.

2.2 Office Selections Control Circuit For Key Pulsing Senders - 0125

2.21 Trunk Closure Test

Block relay TC of this circuit normal. Operate the REP key and originate a full selector call. Observe that the test circuit blocks in position 9. Release relay TC, block relay TC-1, normal and repeat the test. Release relay TC-1, insulate contacts 2 and 3B of relay TR of this circuit and repeat the test. Remove the insulation from relay TR, originate a call and observe that it is completed satisfactorily.

2.22 Check of Trunk Closure on PCI Calls

Insulate contacts 1, 2 and 3B of the TR relay and contacts 9 and 10B of the PC relay of this circuit. Operate the REP key. Originate a PCI call. Observe that the test circuit blocks in position 9. Remove the insulation from the PC relay and from the 1 and 2B of relay TR. CA the circuit and observe that the call goes through OK. Remove the insulation from contacts 2 and 3B of the TR relay. Repeat test and observe that it completes satisfactorily.

2.3 Operator's Class Control Circuit For Key Pulsing Senders - 0129

2.31 Check of Condenser For Delayed Operation of TC-1 Relay

Block relay TC operated. Insulate the 2 and 3T contacts of the DO relay. Charge the B condenser by connecting ground through a test receiver to the back contact of relay TC. Check that the condenser may be discharged by connecting battery through the test receiver to winding terminal 6 of relay TC1 or 11B of C relay. Set up a three digit operator code, with distant office selections, operate the class key No. 11, REP and ST keys. Observe that the test call completes satisfactorily.

2.4 Sender Group Test Circuit -0131 (Key Pulsing Senders)

2.41 Check for Crosses on CO - Relay Contacts

Cross the 3 and 4T contacts of the CO relay of the key pulsing sender to be used for test. Set up a full selector call using class key No. 1 and class of service

(2-INC) keys. Operate the TCT, REP and ST keys. Observe that the test frame blocks. The AL and AC relays of the sender may be operated or the trouble indicator may display the XT lamp. Repeat above test setting up a tandem PCI call using class key No. 4 and (3-TAN) keys. Observe that the test frame blocks. Remove the cross from the 3 and 4T of the CO relay, repeat tests and observe that the test call completes satisfactorily.

2.5 Connector Circuit -0102

2.51 Pulsing Prefix "One - One" - Key Pulsing Senders

Set up a full selector XB extended area code and operate the 1 - 1, REP and DSS keys. Operate the ST key and observe that relays 11X and ACX of the sender operate. Operate and release the AV key 3 times and note that relay 11X releases. Using the AV key to control the dialing of the office and numerical codes check that the test frame completes the test on the sender.

2.6 Incoming and Final Selections Control Circuit -0113

2.61 Late Release Full Selector Test

Operate key DSS and set up a full selector test and operate the REP and late release full selector class key No. 3. Block relay LR normal in the sender to which the test circuit is connected. Operate the ST key. The office and thousands digits should be dialed after which the test circuit opens the T and R leads to the sender. The sender should release and ground the LR lead but since the LR relay is normal no ground is received on lead LR and the test circuit blocks with the SP selector in position 1. Remove block from relay LR, restore the ST key and momentarily operate key CA. Block relay WO-1 of the test circuit normal and repeat the above test noting that the SP switch blocks in position 2. Release relay WO-1, restore the ST key and momentarily operate CA.

3. TEST OF TEST FRAME TROUBLE DETECTING FEATURES (SUB. SENDERS - PCI CLASS CALL)

3.1 Code Keys and Dial Pulsing Circuit -0105, -0106

3.11 Tone to Sender Monitor X Wiring

Set up a PCI call and operate keys REP and DSS. Operate the ST key. Check for tone at contacts 1B and 6T of sender MS relay or 4B and 3T of MS1 relay. Operate the AV key and check that tone is present each time that the dialing of a digit is completed.

3.12 Cancellation of Test for Ground on the FT and FR Leads Before PCI Pulsing when First Pulse is Positive

Set up tandem PCI codes with 3, 6, and 8 for the first digit and also with PCI non-tandem codes using one party line call to station R and one call using 1 for the ten-thousand digit. Block relay GT of the PCI REG unit normal. Operate the ST key and note that call goes through without blocking. Unblock the GT relay.

3.13 Checking the Grounding of the FT and FR Leads by the Sender Before Sending PCI Pulses

Set up tandem PCI codes with 2, 4, 5, 7 or 9 for the first digit and PCI non-tandem codes with 2, 4, 5, 7 or 9 and party letters, W, J and M. On each call block relay GT of the PCI register unit normal, operate the ST key and note that the test circuit blocks. Unblock the GT relay and reoriginate the call with the GR relay blocked operated and note that the test circuit blocks. Release relay GR, originate the call with relay GT blocked operated and note that test circuit blocks. Release relay GT, re-originate the call and note that it goes through OK.

3.2 PCI Dial Pulse Control Circuit -0115

3.21 Check of S and LR Lead Controls of the PCI Dial Pulse Control Circuit

Set up a PCI class call and operate the REP key. Block the S relay of the PCI dial pulse control circuit normal. Operate the ST key. Observe that the DP selector blocks in position 21 with the RLS lamp lighted. Unblock S, block LK normal, and repeat the test. Unblock relay LK.

3.22 Synchronizing Sender for Trunk Test

Block the S6' relay of the sender normal. Set up a non-tandem PCI call above ten thousand. Operate keys REP and ST, and note that the test circuit blocks with the DP switch in pos. 21 with the TG and SD lamps lighted. On coin senders CN lamp lights instead of SD. Release the ST key and momentarily operate the CA key. Set up a PCI tandem or non-tandem call below ten thousand and note that the test circuit blocks as described above. Remove block from S6' relay.

3.23 PCI Release

Block the TR relay normal. Set up a PCI tandem or non-tandem call. Operate keys REP and ST and note that the test circuit blocks in position 13 of the SP switch. Release the ST key and momentarily operate the CA key. Operate the DSS key and again operate the ST key. After the thousands digit has been sent, block the TR relay operated and then operate the AV key. The TR relay blocked operated is the same condition as a false ground on the TR lead, therefore, the SP selector should block in position 12. Remove block from TR relay.

3.24 Check of Wipe-Out Test Feature

Set up a test call using class key 7 (Late Release Without Distant Office) with a code for direct PCI not routed through a distant office selector. Block relay WO of

the PCI Pulse Control Circuit normal and then operate the ST key. Note that the SP switch blocks in position 13. Repeat the test with a test call using class key 8 with a direct PCI code via distant office selector. Use four numerical digits on each call.

3.3 PCI Register Circuit -0117

3.31 Check of Slow Assignment

Block the CIP relay operated. Check for ground at 3B of relay AS1. Manually operate relay TG1 and note that it locks. With one side of a test pick connected to battery, check that the ground at 3B of relay AS1 is interrupted when relay SA is manually operated. To repeat this test, release and reoperate relay SA. Release relay CIP.

3.32 PCI Register Circuit Fast Assignment

Set up a PCI tandem or PCI direct call and operate key FAS. Block normal relay TG of the sender to which the test frame is connected. Operate keys REP and ST and note that the test frame blocks with the CIP switch in position 13. Remove the block from TG relay.

3.33 Two Stage Tandem PCI Call - Subscriber Senders

Operate keys TS-PCI, DSS and REP. Insulate contacts 4T and 5T of the C' relay of the sender being used for test. Set up a PCI tandem call using any suitable office and numerical code. Dial the office code using the AV key. Observe that the C digit PCI checking lamp lights after the C digit is dialed. Release the DSS key. Observe that the test frame blocks with the CIP switch in position 9. This test checks the ability of the test frame to detect a sender that starts to send out the PCI pulses of the numerical code before all digits of the code have been dialed. Release the circuit. Remove the insulation from relay C' of the sender. Run a test call on the sender using the same PCI tandem code and observe that the call is completed satisfactorily.

3.34 PCI Register Circuit Checking of the Final Heavy Positive Pulse

Set up a PCI tandem or direct call. On jobs where no final positive pulse is received, insulate contacts 1 and 2B of the U relay. On jobs where a final positive pulse is received insulate contacts 4 and 5B of relay UA1. Operate keys REP and ST and note that the test frame blocks with the CIP switch in position 13. Remove insulator from the relay.

3.35 Check for Slow PCI Impulser

Set up a PCI direct call and block relay F of the PCI Register Circuit normal. Operate keys REP and ST and note that the test circuit blocks with the CIP selector in position 13. Remove block from F relay.

4. MISCELLANEOUS CIRCUITS

4.1 Check miscellaneous circuits for the test frame that are not checked on other tests: (1) test battery supply, (2) frame line circuit, and (3) fuse alarm. Check that the fuse alarm is not stopped when the FA or 20A lamp is burned out or removed.

5. SENDER MAKE BUSY FRAME

5.1 Check miscellaneous features of the sender make busy frame that are not checked on other tests such as the following:

(1) Test battery supply.

(2) Telephone circuit and associated tie lines and trunks.

(3) Fuse Alarms. Check that the fuse alarm is not stopped when the FA lamp is removed. Repeat the test with the 20A lamp removed.

5.2 Sender Supervisory Meters

5.21 PD Meter

5.211 Determining from job information the number of senders necessary to operate the PD1 relay and block operated the LM1 relay in these senders. Check that in 10 to 20 seconds SSM lamp lights and alarm sounds. The PD meter should indicate the number of senders blocked.

5.212 Operate AR key. SSM lamp remains lighted but alarm is silenced.

5.213 Remove blocks from relays. SSM lamp is extinguished.

5.214 Block normal A relay. Determine from job information the number of senders necessary to operate the PD2 relay and block operated the LM1 relay in these senders. Check that the SSM lamp lights and alarm sounds.

5.215 Block operated LM1 relay in all senders in group. Check that the PD meter indicates the number of senders blocked.

5.216 Remove blocks from relays and restore circuit by operating AR key

5.22 SC Meter

5.221 Determinine from job information the number of senders necessary to operate the SC relay and block operated the LM1 and either UL1 or UL2 relays in these senders. Check that the SSM lamp lights and alarm sounds.

5.222 Block operated the LM1 and either UL1 or UL2 relays in all senders in group. Check that the SC meter indicates the number of senders blocked.

5.223 Remove blocks from relays and restore circuit by operating AR key.

5.3 The test of other features of the sender make busy frame are covered in various sections of this handbook.

➔ Arrowed lines indicate new or changed information.

R. E. RAHMES

Engineer of Installation

Reason for Reissue:
To include Par. 5.2

Replaces Section 161.4 of Handbook 61, dated 8-17-44.