STUCK SENDERS
METHOD OF TRACING
PANEL OFFICES

1. GENERAL

1.01 This section outlines the procedure to be followed when tracing stuck subscriber or key pulsing senders in panel offices.

1.02 This section is reissued to cover senders arranged for automatic priming after time out, senders arranged for timed release and to include key pulsing senders. Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.

1.03 Where sender monitor operation is used each subscriber sender has a stuck sender lamp and a make-busy jack on the sender make-busy frame or trouble desk. The stuck sender lamps are lighted by action of the sender monitor operator to indicate to the plant forces the senders that are held for tracing.

1.04 When subscriber senders are not associated with sender monitor positions an automatic release feature is required to release the subscriber line and free the sender from the stuck sender position. The timed release feature is based upon the use of a disconnect tone. However, where this tone is omitted, a feature is provided to automatically prime the sender after time out, releasing the line and allowing the sender to restore.

1.05 Each key pulsing sender and each automatic release subscriber sender has a make-busy jack and a cancel time release (CTR) or cancel priming (CP) key on the sender make-busy frame.

1.06 Under normal conditions it is desirable that the (CTR) or (CP) keys be in the pulled out position to cause senders to remain stuck on trouble conditions and to permit tracing. Under abnormal conditions, however, such as trunk cable failure, etc., these keys should be in the pushed in position, to permit senders that become stuck to release automatically.

> Caution: If the subscriber senders are permitted to release automatically at all times, a serious trouble condition might develop in the equipment and exist for some time before it is detected.

1.07 In determining the number of senders which may be held for tracing, it should be recognized that a sufficient number of senders should be kept in service in each group to adequately handle the traffic. If an overload is indicated, however, all stuck senders should be released. Also, any senders held by make-busy plugs should be restored to service if they are not being held because of inoperative conditions.

1.08 When stuck senders are being held, a trouble ticket should be made out for each stuck sender indication. Every effort should be made to obtain essential and accurate information on each connection traced. In tracing the connection, first determine if a subscriber line is being held, in which case the line should be released immediately. If no line is being held, the cause of the stuck condition should be located and the circuits restored to normal as soon as possible.

1.09 Before releasing a stuck sender where a two-wire trunk is involved, a make-busy plug should be placed in the trunk make-busy jack until a test call has been made to make certain the equipment has restored to normal.

> Note: If the trunk involved is to a panel tandem office or a distant office selector have the outgoing trunk from the panel tandem office or distant office selector multiple made busy and a test call made before releasing for service.

1.10 Stuck sender registrations should be closely observed. If the number of registrations is considered to be excessive, or if it appears that the trend is in the increasing direction, and it has been determined that plant troubles are not involved, it is possible that inadequate coverage of the call indicator "B" positions is the contributing factor.

2. APPARATUS

2.01 No. 184B (make-busy) Plugs, as required.

3. METHOD OF TRACING

3.01 When a stuck sender signal is received at the trouble desk or make-busy frame, the attendant should insert a make-busy plug

in the associated make-busy jack and record the sender group and the sender number on a trouble ticket.

3.02 When tracing stuck sender connections, an effort shall be made to determine if the trouble is in the sender, without opening sender cabinet doors, before district readings are taken. If the readings indicate that the sender is in an out-of-step condition or in one of the positions indicating sender trouble, it will be unnecessary to trace the connection further.

(A) Obtaining Sender Information

3.03 At the sender frame, ascertain the position of the following equipment and enter this information on the trouble ticket:

Decoder Type

Positions of all sequence switches and settings on register relays.

Translator Type

Positions of all sequence switches and settings of time measure, register control and all register selectors. Determine the code dialed from the setting of the A, B and C registers or the rotary translator.

(B) Obtaining Subscriber Link Number - Link Type Offices

3.04 At the link finder frame, the number of the link attached to the stuck sender is determined.

Note: In offices having DSA switchboard dialing district selectors, the link finder may indicate that a dialing district selector is connected to the stuck sender. In this case there will not be a link involved.

3.05 Operate and release the link finder ST key associated with the sender group in which the stuck sender is located. Upon the release of the ST key, the link finder will start to hunt and will stop when it encounters a low resistance ground on the SC lead of a link or dialing district selector. Under this condition, one of the switch lamps, one of the T lamps, and one of the R lamps will light.

3.06 After obtaining the numbers of the lighted lamps, refer to the chart located on the link finder frame. The lighted switch lamp indicates the switch number. The T lamp which is lighted, indicates the terminal number. These two lamps together indicate a group of five links. The lighted R lamp corresponds to the link affected in this particular group.

3.07 After thus obtaining a link number, reoperate and release the ST key to detect any other links which may be attached to stuck senders in the same sender group. A record of these links should be made for later reference.

3.08 After completing the test of all links in the sender group, as indicated by the extinguishing of the last switch lamp, go to the link frames.

(C) Obtaining District Selector Number - Link Type Offices

3.09 At the link frames, determine the link used on the connection being traced, by reading the rack of the sender selectors of the links recorded in Paragraph 3.07 and referring to the associated designation cards for the sender number appearing on the ticket. Read the rack of the district finder of the link used and, from the associated designation card, obtain the number of the line finder district selector. Enter the above information and the position of the link sequence switch on the trouble ticket.

(D) Obtaining District Selector Number - Sender Selector Offices

3.10 At the district finder frame, operate and release the ST key associated with the sender group in which the stuck sender is located. Upon the release of the ST key, the district finder will start to hunt and will stop when it encounters a low resistance ground on the SC lead of a district selector. Under this condition, one of the switch lamps, one of the T lamps, and one of the R lamps will light.

3.11 After obtaining the number of the lighted lamps, refer to the chart located on the district finder frame. The lighted switch lamp indicates the switch number, the T lamp which is lighted, indicates the terminal number; these two lamps together indicate a group of five district selectors. The lighted R lamp corresponds to the district selector affected in this particular group.

3.12 After thus obtaining the number of a district selector, reoperate and release the ST key in order to detect any other district selectors which may be attached to stuck senders in the same sender group. A record of these district selectors should be made for later reference.

3.13 After completing the test of all district selectors in the sender group, as indicated by the extinguishing of the last switch lamp, go to the sender selector frames. Determine the district selector used by checking the positions of the district sender selectors recorded in Paragraph 3.12, and referring to the associated designation cards for the sender number appearing on the trouble ticket.

(E) Obtaining District Selector or Trunk Number - Key Pulsing Sender Only

3.14 The sender FT and FR relays indicate the routing of the call as follows:

Relays Operated	Routing
None	DSA switchboard key pulsing district
FT	Distant office selector or crossbar tandem office
FR	Local or interoffice incoming selector or incoming trunk
FT, FR	Full selector tandem district

(F) Obtaining District Selector Information

3.15 At the district selector frame, obtain the following information and enter it on the trouble ticket:

Position of district selector sequence switch.

Number of multiple brush tripped. (Observe if more than one brush is tripped.)

Rack reading. (If multiple brushes are below the first or above the last multiple terminals, enter "No" or "TT," respectively.)

Number of frame and selector or trunk with which multiple brush is connected. (Obtained by consulting multiple bank designation card.)

Note: If subscriber's line is attached, it should be released by resetting the line finder brush or in line switch offices by momentarily releasing the cutoff relay.

(G) Obtaining Office, Incoming, and Final Selector Information

3.16 If any office, incoming or final selectors are involved, obtain the following information pertaining to each of these selectors and enter it on the trouble ticket:

Position of sequence switch.

Number of multiple brush tripped. (Observe if more than one brush is tripped.)

Rack reading. (If multiple brushes are below the first or above the last multiple terminals, enter "No" or "TT," respectively.)

Number of the frame and selector, trunk, or subscriber's line with which the multiple brush is connected. (Obtained by consulting multiple bank designation card.)

Note: On final selectors, reset the multiple brush to free the subscriber line.

3.17 If the sender is in trunk test position with the TG or MTG relay non-operated and the district and office selectors are in position for selection beyond, the trunk on which the office selector is resting should be tested for battery and ground before the trunk is referred to the terminating office. If 48-volt battery and ground are found on the trunk and the indication is that the trouble is in the originating office, the ticket shall not be referred. However, if a test of the trunk at the OGT indicates that the incoming selector involved is off normal (24 volts or 48 volts if a tandem trunk), it shall be restored to normal by inserting the test cord in the trunk jack and operating the proper keys to place a short across the trunk. To be certain the incoming has restored to normal, a test call should be made on the trunk before removing the test cord.

4. REPORTS

4.01 The required records in this connection should be entered on the proper form.