DESCRIPTION OF HANDLING PERMANENT SIGNALS AND PARTIAL DIALS NO. 2 ELECTRONIC SWITCHING SYSTEM

1. GENERAL

1.01 This section describes the handling of permanent signals and partial dial calls from regular or PBX lines by the No. 2 Electronic Switching System (ESS). For additional information, refer to the High and Dry Program description (PD-2H224-01).

1.02 This section is reissued to include information pertaining to the EF-1 generic program and issue 4 of the LO-1 generic program. Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

2. DESCRIPTION

PERMANENT SIGNALS

2.01 Permanent signals occur when no digits are received by a customer digit receiver within 10 to 16 seconds after an off-hook condition. The timeout period is 10 seconds during periods of heavy traffic.

2.02 The following steps are taken, in turn, by the program in an attempt to remove the permanent signal condition. Fig. 1 provides this program treatment in abbreviated flow chart form. If the line goes on hook at any time during the following treatment, the treatment is abandoned and the line is disconnected as if it were an ordinary line.

(a) An attempt to return coin is automatically made by the program on all coin lines immediately before a permanent signal treatment is started. A stuck coin causes the call to be routed via a stuck coin trunk to an operator, if one exists, and a TTY message to be printed.

(b) An attempt is automatically made by the program to clear permanent signals on all lines by removing battery and ground from the lines for a 1-second period immediately before the next step. This releases holding bridge equipment at certain customer key telephone stations and clears this type of permanent signal.

(c) The line is given the treatment defined by Route Index (RI) 017 (usually on announcement or tone). If there are no idle members in the group defined in RI 017, or if the group is defined without any members at all, or if the connection is blocked, this step is omitted and treatment proceeds to Step (e).

(d) If the 30-second time period expires and the line remains off-hook, it is connected to a tone. A non-PBX line is connected to the receiver off-hook (ROH) tone for a period of 40 seconds. A PBX line is connected to the reorder tone for 40 seconds. This step is omitted if the tone group (ROH or reorder) has no idle members, or if the connection is blocked.

(e) The line is then connected, via an outgoing trunk circuit, to an operator who may listen and talk on the line. This connection is controlled by RI 15 for noncoin phones and by RI 16 for coin phones. The purpose of the operator is to provide assistance to customers, especially in an emergency situation. When a customer line is connected to a switchboard one of two lamps associated with coin and noncoin trunk groups light. The lamps are designated as PS COIN and PS NONCOIN to indicate the class of the customer line. If the operator does not answer the call within 60 seconds, or when the operator disconnects after answering a call, the call is advanced to Step (f). A line that cannot be

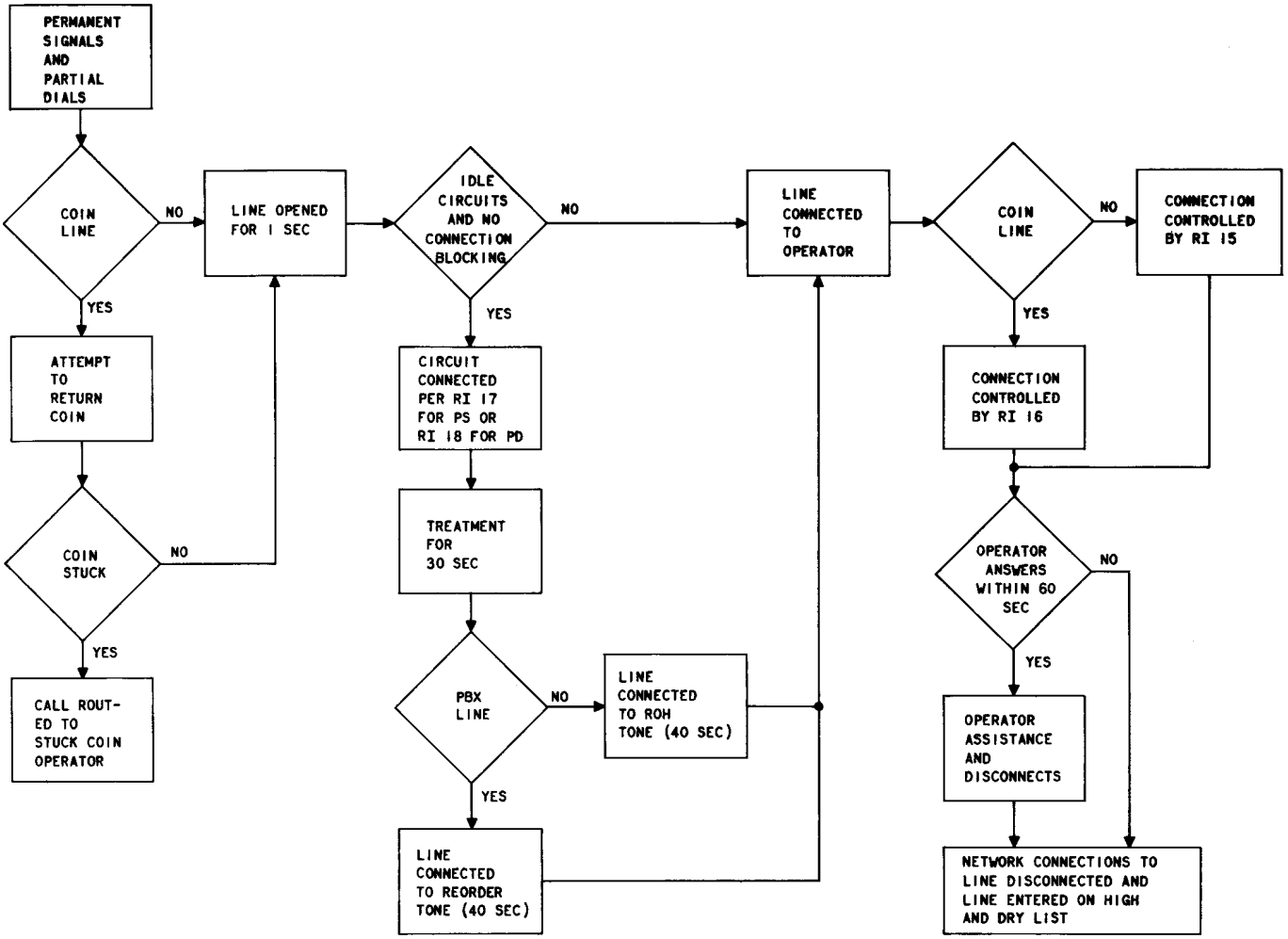

Fig. 1—Handling Permanent Signals and Partial Dials

connected to an operator due to blocking or a busy condition, or if no member exists in the group, advances to Step (f). A line that cannot be connected to an operator due to blocking or a busy condition, or if no member exists in the group, advances to Step (f).

(f) All network connections associated with the line are taken down, the line ferrod is left unconnected (with its associated cutoff ferreed opened), and the line is entered on the call store High and Dry List. The line last-look bit (LLB) in call store memory remains marked busy so that a termination cannot be made to the line. After the line has been entered on the high and dry list, the line ferrod is connected (and its associated cut-off ferreed is closed) every 16 to 64 seconds and then scanned. If the line is on-hook, the LLB is idled and the line is removed from the high and dry list. If the line is off-hook, the line ferrod is disconnected and the line is left on the high and dry list.

PARTIAL DIAL CALLS

2.03 Partial dial calls are calls that are not completely dialed and therefore timeout after the reception of at least one digit. The timeout period is normally 10 seconds.

2.04 Partial dial calls are treated exactly like permanent signals (2.02) except that RI 018 is used in place of RI 017 in 2.02 (c).

HIGH AND DRY LIST

2.05 When more than a certain number of permanent signal or partial dial lines (the number is set by the operating company and is a recent changeable item) enters the high and dry list in less than five minutes, a message that the number has been exceeded is printed on the local test desk (LTD) teletypewriter and the maintenance teletypewriter. The minor alarm is then set.

2.06 A teletypewriter printout of the associated directory number occurs on the LTD typewriter after a line has been on the high and dry list for a period of time predetermined by the operating company. The directory number will be printed out only once. The predetermined period of time is called office time and can be 15, 30, 45 or 60 minutes. A line will not be printed on the LTD teletypewriter until it has been on the high and dry list for at least the specified time. (Consult the Output Message Manual for correct formats for all high and dry list TTY printouts mentioned in this section.)

2.07 The number of transient call registers (TCR) that may be associated with the high and dry list varies with the number of call stores in the office. An office with 3-call stores or less will have 10 TCRs. An office with 4 to 10 call stores will have 24 TCRs. Offices with Issue 3.3 or earlier of the LO-1 generic program will have 10 TCRs. Each TCR may contain up to 6 line terminal equipment numbers. Four classes of TCRs may be entered on the high and dry list. Three are ***supervisory*** classes for lines in a permanent signal or partial dial condition, or with a sensitive line ferrod. Each supervisory class TCR is distinguished by the length of time the associated lines have been on the high and dry list as follows:

- Minimum Class: This class of TCR contains lines that have been on the list for less than office time (15, 30, 45, or 60 minutes).
- Medium Class: This class of TCR contains lines that have been on the list for less than twice the office time.
- Maximum Class: This class of TCR contains lines that have been on the list for longer than twice the office time.

Lines contained in minimum and medium class TCRs are scanned every 16 seconds. Lines contained in maximum class TCRs are scanned every 64 seconds. A line is removed from the list and returned to service if it is found on-hook during a scan.

2.08 If a line is to be entered in a supervisory class TCR, and there is no space available in the proper class, a printout will occur identifying the directory number of the line and the class of TCR into which it should have been entered. An attempt is then made to enter the line in one of the other supervisory classes of TCRs.

2.09 The fourth class of TCR that can be entered on the high and dry list is a ***nonsupervisory*** class. A line is entered in a nonsupervisory class of TCR because of a power cross failure, or a maintenance request. Lines in a nonsupervisory

class TCR are not scanned and can only be removed by a maintenance request.

2.10 When the high and dry list is full, the ***spurt*** alarm is sounded. A printout of the directory numbers of the lines is made at the LTD teletypewriter. No additional lines can be added to the list until an entry is deleted from the list. For lines that cannot be added to the list, the line last-look bits are left marked busy. The audit program will restore the nonstored lines to service only after the high and dry list becomes partially empty.

2.11 A printout may be requested of the directory numbers of all permanent signal lines presently in the high and dry state by using the maintenance or LTD teletypewriter. Consult the Input Message Manual for the correct format for this TTY request. The system responds by printing out, on the teletypewriter, the directory numbers of all lines in the high and dry state.

> ***Note:*** Since the directory number does not uniquely identify a multiline hunting group line, the member number for the multiline hunting group line is also printed out. If a multiparty line is involved, the directory number of the first defined party is printed out with a code indicating a party line. Since any party could be the cause of the trouble, use office records to obtain the directory number of all parties involved.

TESTS

2.12 Tests may be performed on a line in the permanent signal or partial dial condition by using the 14-type LTD. With the connection to the LTD established, any of the following conditions may be applied to the customer line:

(a) Voltmeter Tests

(b) Ringing

(c) Receiver Off-hook Tone (ROH).

2.13 Tests may be performed on a line in the permanent signal or partial dial condition by using the No. 3 Local Test Cabinet. Refer to the appropriate 662-division section for No. 3 Local Test Cabinet operating and testing methods.

2.14 A line can be removed from a nonsupervisory TCR by a TTY request after repair. The M L:RST message typed in at the LTD or the maintenance center will place the lines terminal equipment number in a supervisory class TCR. If the line remains on-hook for 10 seconds, it will be returned to service.