

DIAL-TONE-FIRST FACTORS (DTF) FOR THE CENTRAL OFFICE

Note: The implementation of dial-tone-first (DTF) service and the Coin Service Improvement program highlighted new changes and new objectives.

1. BASIC OBJECTIVES

1.01 To enable customers to dial certain calls without an initial coin deposit, such as calls to the operator for assistance, NPA Directory Assistance calls, station-to-station toll calls, person-to-person calls, collect calls, credit card calls, and three digit service code calls including the 911 emergency code.

1.02 To give the customer greater assurance that the DTF system is working before a coin deposit is made. Coincidentally, the customer would be able to report a trouble condition without depositing a coin.

1.03 To permit DTF service operation in all types of central office—except panel—with all types of traffic switchboards and systems.

1.04 To improve transmission characteristics and reduce noise by removing the unbalancing ground at the station during conversation. An improvement of 12 to 34 db in 180 Hz balance can be expected when ground removal is employed. Ground removal also substantially reduces corrosion caused by ground currents.

2. FUNCTIONAL CHANGES

2.01 The DTF requires new screening of dialed digits by the central office to determine whether an initial rate is required to complete the call.

2.02 With present-day methods of coin station operation and with the need to handle both initial deposit-and subsequent deposits of less than initial rate, it is necessary for the central office to generate and send to the station a signal which conditions the station to read out deposits of less than initial rate. In coin-first (CF) service application

of loop current serves this signal function. But with DTF, loop current is applied before a coin is deposited. Thus a new signal must be provided. This new signal is a reversal of talking battery, specifically, **positive 48 volts** on the ring conductor and ground on the tip conductor. Tip and ring battery reversal is employed in remote switching system (RSS) rather than positive 48 volts.

2.03 To effect ground removal during conversation, changes are necessary in the central office coin control and coin testing arrangements as well as at the station.

2.04 Positive battery is fed to the coin station on calls placed through TSPS. A new method accomplishes this by a change in signaling procedure from TSPS equipment to the local office (which applies a positive 48 volt talk battery when an operator or ACTS equipment is connected). A less elaborate arrangement is used with older TSPS arrangement (prior to 1T10) and cord switchboards, in which local office trunks to a TSPS or cord switchboard are arranged to supply positive battery to the coin station as long as the station is connected to the trunk.

2.05 On dial-tone-first application of positive 48 volt talking battery permits readout of less than initial rate deposit on toll calls.

3. CENTRAL OFFICE CONSIDERATIONS

3.01 *No. 1 ESS:*

- (a) The following AT&T Letters describe dial-tone-first arrangements for No. 1 ESS:
 - GL 70-02-061, EM 1735
 - GL 70-06-059, Supplement 1 to EM 1735
 - GL 72-02-046, EL 1674
- (b) Feature Document FD 231-090-095 covering coin service in No. 1 ESS has been released.

This document will include additional dial-tone-first information.

(c) **Corrections to GL 70-02-061, EM 1735:** The following changes should be made to GL 70-02-061, EM 1735:

- Paragraph 3.4.1 — Reference to stuck coin operator should be removed.
- Paragraph 3.4.2 — Reference to stuck coin operator should be removed.
- Paragraph 4.1 — Refer to Station Section for coin station set modifications. (Section 4 of this document.)
- Paragraph 4.2.6 — Refer to GL 71-06-015, EL 1279 for local test desk modifications.
- Paragraph 7.2 — Delete Step SC4.
- Paragraph 7.3 — Delete Plan (B).

(d) **Combined Coin and Noncoin Operator Trunk Groups:** Coin and noncoin traffic should not be combined on the same operator or TSPS trunk group, unless Expanded Inband Signaling is fully operational. Positive battery supervision must be provided for coin lines and normal negative battery for noncoin lines. If noncoin lines are served by trunks with positive battery, end-to-end TOUCH-TONE signaling is not possible, and toll diverted lines will be disconnected.

(e) **Conductor Loop Range:** The only approved circuits for extending the range of DTF coin lines in No. 1 ESS are the [8A range extender (Coin REG)] signaling range extender, NS-02517-01 the coin dial long line, SD-96592-01, and SLC-40. Refer to the General Section for ranges obtainable with these circuits.

(f) **Insufficient Initial Deposit Announcement:** A special "Insufficient Initial Deposit" announcement should be provided. The recommended wording of this announcement is given in the General Section. If all of the trunks

to this announcement are busy, reorder tone should be connected.

3.02 No. 2 ESS:

(a) **Engineering:**

(1) Refer to TFP, Div D, Section 12-C for engineering of circuits required for dial-tone-first. Be sure to allow for the increased holding time of dial-tone-first lines on customer digit receivers, coin supervisory control circuits, permanent signal equipment and the switching network.

(2) Paragraph 4.4.1 of the TFP suggests the use of a 5-second holding time for the "Insufficient Initial Deposit" announcement if actual data is not available. This is incorrect. The suggested holding time should be 18 seconds.

(b) **Line Assignment:** If coin lines are being transferred from other switching machines at this time, care should be exercised in assigning these lines so that network blockage does not result.

(c) **Polarity on TSPS Trunks:**

(1) TSPS trunks SD-2H112-01 and SD-2H144-01 must be modified to provide positive battery on calls from coin lines and negative battery on calls from noncoin lines. The fix covered by TC 82393 and TC 83410 (Broadcast Warning No. 361) for EF generics and TC 23552 and TC 25332 (Broadcast Warning No. 354) for LO generics must be provided to maintain positive battery after coin collect, coin return, or ringback.

(d) **Polarity on Operator Trunks:**

(1) All operator trunks including TSPS, recording completing, coin overtime, and coin zone must be modified to provide positive battery on calls to or from coin lines. Trunks requiring modification include the following:

- Outgoing to TSPS — Loop SD-2H144-01
- Recording Completing — Loop SD-2H110-01

- Recording Completing — E&M SD-2H112-01
- Coin Overtime SD-2H113-01
- Coin Zone SD-2H151-01
- Outgoing Switchboard SD-2H105-01.

(e) **Conductor Loop Range:** The only approved circuits for extending the range of dial-tone-first coin lines in No. 2 ESS are the (8A range extender) signaling range extender, NS-20517-01, the coin dial long line, SD-96592-01, and SLC-40. Refer to the General Section for ranges obtainable with these circuits.

3.03 No. 3 ESS:

(a) The following AT&T Letters/Documents describe dial-tone-first arrangement for No. 3 ESS:

- GL 78-04-097, EL 5749
- FD 233-190-112.

3.04 No. 5 Crossbar:

(a) The following AT&T Letters describe dial-tone-first arrangements for No. 5 crossbar:

- GL 69-08-132, EM 1425
- GL 72-05-006, EL 1829.

(b) **“Insufficient Initial Deposit” Announcement:** The dial-tone-first arrangement of intercept trunk circuit SD-26121-01 (J23057CH) should be used to provide the “Insufficient Initial Deposit” announcement from either the 6A or 7A announcement system. Issue 14B of this circuit provides for the return of a partial deposit when the customer hangs up.

(c) **Originating Registers:**

(1) In considering whether or not to modify all originating registers (OR) for dial-tone-first service, the following quotation from Traffic Facilities Practices, Division D, Section 8-e(1), Paragraph 4.54 should be noted:

“From a circuit capability standpoint, the No. 5 Crossbar System can be equipped

with up to six Originating Register Groups (ORGs). The effects, however, of interaction between dial tone markers and ORs are such that if an insufficient quantity of ORs is provided in one ORG, the dial tone service of customers assigned to the other ORGs in the office will be adversely affected. In general, as the number of ORGs in an office is increased, the possibility of poor dial tone service due to a forecasting error on one of these groups is increased. Coin traffic characteristics are frequently volatile and therefore more difficult to forecast than other types of traffic. Consequently, provision of a separate group of ORs for Dial-Tone-First should be avoided.”

(2) In addition, essential lines and coin lines are assigned to the same vertical group. This means that if a separate dial-tone-first originating register group is provided, in case of a disaster, all essential lines and all coin lines will be limited to this separate group of originating registers.

(3) Refer to TFP, Division D, Section 8-e(1), for further discussion on the equipping of originating registers for dial-tone-first service.

(d) **Coin Supervisory Test Circuit:** Offices equipped with the coin supervisory test circuit should have this circuit modified for dial-tone-first operation.

(e) **Recycle:** If the automatic recycle feature for coin disposal has not previously been provided, it is recommended that it be added at the same time dial-tone-first is provided. The recycle feature is described in GL 71-09-013, EL 1398.

3.05 No. 1 Crossbar:

(a) The following AT&T Letter describes dial-tone-first arrangements for No. 1 Crossbar:

- GL 70-03-176, EL 447.

(b) **Subscriber Senders:** Page 3 of GL 70-03-176 discusses the modification of only a portion of the subscriber senders for dial-tone-first rather than a modification of all the senders. In so doing, care should be exercised to insure that

the traffic generated by lines served by the modified senders will not be so great that service may be adversely affected. Sender holding time on dial-tone-first lines will be increased due to coin deposits being made after receipt of dial tone and to a larger number of permanent signals.

(c) **Recycle:** If the automatic recycle feature for coin disposal has not previously been provided, it is recommended that it be added in connection with the conversion to dial-tone-first. The recycle feature is described in EL 2451.

3.06 Step-by-Step:

(a) The following AT&T Letters describe dial-tone-first arrangements for step-by-step:

- GL 72-05-108, EL 1484

- GL 73-03-078, EL 2299.

(b) **Local Connectors:** The DTF operation requires the use of either toll transmission selectors or coin connectors for incoming calls from an operator. These are the only arrangements that provide the proper battery polarity for dial-tone-first service.

(c) **Auxiliary Line Circuit Coin Operation:**

The DTF operation is not compatible with the auxiliary line circuit method of coin operation used in some 355 and 35E97 type offices.

(d) **Conductor Loop Range:** The only approved circuits for extending the range of DTF coin lines in step-by-step are the signaling range extender, NS-02517-01, coin dial long lines, SD-32053-01 and SD-96592-01, and SLC-40. Refer to the General Section for ranges obtainable with these circuits.