SWITCHING SYSTEMS MANAGEMENT
NO. 2 ELECTRONIC SWITCHING SYSTEM
OPERATIONAL FEATURES
DIAL TONE FIRST, COIN

CONTENTS PAGE

1. INTRODUCTION

1.01 Dial tone first (DTF) is a feature that is part of the coin service improvement package. It enables a coin customer to dial certain calls without requiring an initial coin deposit. These include assistance calls to an operator, station-to-station toll calls, person-to-person calls, collect calls, credit card calls, toll directory assistance calls, and 3-digit service codes including 911, the universal emergency code. It is provided in a No. 2 ESS office by

changing the basic coin service from ground start to loop start operation and implementing hardware and software changes.

1.02 This section describes DTF for the No. 2 ESS. It provides the network administrator with information pertaining to the attributes, administration, availability, and engineering required for the DTF feature.

1.03 When this section is reissued, this paragraph will contain the reason for reissue.

1.04 The title for each figure includes numbers in parentheses which identify the paragraphs in which the figure is referenced.

2. FEATURE DESCRIPTION

DESCRIPTION

A. Customer (User) Perspective

2.01 The coin station user may initiate a call to a free number (eg, assistance operator or emergency bureau) by removing the receiver and upon receipt of dial tone, dialing the number without the deposit of a coin(s). If a number dialed is to a nonfree number and no coin has been deposited, the call will be routed to a recorded announcement or reorder tone. If a coin is deposited and a free number is dialed as described in the following paragraph, the coin will be returned on completion of the call.

2.02 The standard dialing codes used and treated as free numbers are "0" (zero) for the assistance operator and all 3-digit service codes including 911.

2.03 On calls to an operator that has the ability to collect or return coins, the TOUCH-TONE® dial on coin stations so equipped is automatically disabled to prevent fraudulent simulation of coin deposits.

B. System Implementation

2.04 When the coin station goes off-hook, a loop closure is placed on the tip and ring conductors to the central office. Since the line equipment (terminal equipment number) is arranged for loop start, the line scanner detects the loop closure and informs the processing programs of an origination. Dial tone is then returned to the coin station.

2.05 When the coin station dials the called number, system translations determine the charge treatment of the call. If the call is free (eg, 911) the call will be routed. If the call is a charge call, a coin test will be made by the customer dial pulse receiver (CDPR). If the initial deposit is present, the call will be routed in the normal manner. If the initial deposit is not present, the call will be routed to a recorded announcement which requests that the customer hang up, reoriginate, insert the initial deposit, and redial the call. If the coin test is satisfied, the call is routed in the normal manner.

2.06 If the call is an untimed charged call, the system awaits answer detection. At answer recognition, a 2- to 4-second charge delay interval is timed before the call is considered chargeable. If either subscriber disconnects before the end of the charge delay period, the coin is returned and the call disconnected. When the charge delay period elapses and the calling and called subscribers are in the talking state the system awaits recognition of disconnect. At disconnect the coin deposit is collected.

2.07 If the local coin overtime option exists in the office, the call will proceed as an untimed call until the end of the charge delay interval. At this time, the system will time an optional interval of from one to five minutes in one-minute increments. Thirty seconds before this interval ends and the call is still in the talking state the initial deposit is collected. This alerts the customer that an additional deposit is required if uninterrupted conversation is to continue. If the call remains in the talking state and the end of the timing interval is reached, a test for coin deposit is made. If a coin is present, the system reinitiates a timing interval for the overtime period. This period is determined by an entry in the charge index expansion table and may or may not be the same as the initial period. If a coin is not present when the coin test is made at the end of the timing interval, the calling and called customer are connected to an overtime monitoring operator. An optional recorded announcement for request of an additional deposit if conversation is to continue is available. The operator will disconnect when satisfied that an additional deposit has been made. A coin test

is then made and if found present, a new overtime interval is initiated.

2.08 Coin control functions such as collect, return, and coin test (except initial coin test at end of dialing) are made by the coin control circuit. This circuit tests for presence of coins by application of positive or negative 48-volt dc potential through a sensitive relay to the tip conductor of the coin line. Collection on return of coins is accomplished by application of ±130 volt dc potential through a ferrod sensor to the tip conductor. The flow of current detected by the ferrod informs the processor of the presence of a coin. When current stops flowing the collect or return operation is considered successful. Positive potential is used for collect and negative potential for return. However, the opposite may have been used as a local office program option when all coin stations were nondial tone first.

FEATURE FLOW DIAGRAM

2.09 A feature flow diagram giving the functional operation of an originating coin call in No. 2 ESS is shown in Fig. 1.

INTERACTIONS

2.10 Prepay coin lines may be intermixed with dial tone first lines in an office by providing loop start or ground start line equipments and assigning the appropriate major class code.

2.11 Local overtime and coin zone call options may be used with dial tone first operation.

2.12 The fraud elimination portion of the coin service improvement package provides +48 volt office battery on operator trunks to disable the TOUCH-TONE dial of a coin station when connected to an operator. Also, the positive potential is used for subsequent 5-cent deposit coin tests. These deposits may be requested by the operator on overtime or toll calls. This feature is usually implemented at the same time as dial tone first.

3. ATTRIBUTES

STATION/SYSTEM

3.01 The DTF feature enables the customer to dial 0+, 0- or a 911 emergency service bureau call without a coin deposit. This arrangement avoids customer inconvenience and irritation in emergency situations or when the coin station is inoperative. When the customer hears dial tone, he or she can be reasonably certain that the coin station is in working order before committing the coin. Furthermore, experience has shown that when customers are able to dial the operator without risking their money they are more apt to report coin station malfunctions, vandalism, or evidence of tampering.

RESTRICTION CAPABILITY

3.02 Dial tone first coin lines may be restricted in the same manner as any other discrete class of service. Since these lines have unique originating major class codes (26 and 27), the screening set up on the code group translations (ESS Form 2304) and rate and route table (ESS Form 2301) may be arranged in any required manner. It may or may not be the same as prepay coin lines.

COST DATA

3.03 Software requirements in addition to that which is required for prepay coin service include the following:

- One or two new line class codes must be provided to define single or multislot coin classes of service.
- Program store translation area required to provide one recorded announcement trunk group ("No initial coin deposit" recording).
- Additional translation area required to implement any new trunk groups dedicated to DTF such as trunks to a toll operator or a 911 emergency service bureau.

3.04 In addition, line ferrods for prepay coin lines must be modified to loop start. This must be coordinated with coin station prepay to DTF modifications.

4. INCORPORATION INTO SYSTEM

HARDWARE ENGINEERING

4.01 To equip a No. 2 ESS office for DTF, the following hardware items are required:

- If no coin lines were previously installed, a number of coin control circuits with dial tone first features must be installed. See Traffic Facilities Practices, Division D, Section 12d for determination of quanitites.
- Provide a number of trunk circuits required for operator services. This will include trunks that provide assistance toll switching coin zone, stuck coin, and TSPS operator services when required. Order these circuits with the +48 volt option. Table A summarizes the ciruits available, their use, options, and trunk order codes.
- Provide a number of audible ring and recorded announcement circuits for the "No Coin Deposited" trunk group.
- Provide one channel on a SD-1A139 recorded announcement circuit. A channel can supply a maximum of 116 recorded announcement trunks.
- Provide any additional CDPRs required due to increased holding time anticipated because of the DTF feature.

4.02 In addition, any prepay coin lines that are being converted to DTF must have their line ferrods changed from ground to loop start. This must be done simultaneously with the totalizer conversion at the coin station and line translation changes described in the software portion of this section.

SOFTWARE ENGINEERING

4.03 Software requirements for the individual coin lines involve changing the Terminal Equipment Number Translator such that the GS (ground start line) bit is a zero and the CN (coin line) bit is a one. This can be accomplished by submitting a Recent Change Service order for each coin line to be added or changed to DTF. See A RC:L/ message in the IM-2H200 for details. Also, the line class code used in the service order must be one in which the major class is 26 or 27 and the GS bit is a zero.

4.04 Other software requirements are dependent on the number of coin lines and the various trunking arrangements required for the particular office involved.

COMPATIBILITY

4.05 The DTF feature is compatible with the following coin telephone sets:

- 200 Multislot Box Type Rotary Dial
- 1C1 Single Slot Box Type Rotary Dial
- 1C2 Single Slot Box Type TOUCH-TONE Dial
- 2C1 Single Slot Panel Type Rotary Dial
- 2C2 Single Slot Panel Type TOUCH-TONE Dial.

OFFICE DATA

A. Translations

4.06 The translation flow required for DTF service is shown in Fig. 2.

4.07 The following Translation Input Forms are affected by DTF and should be considered when submitting to the WECo Regional Center for the initial office data administration (ODA) run. Refer to TG-2H for details and other information required to complete these forms:

FORM	TITLE
2100	Directory Number Table
2102	Terminal Equipment Number Table
2201	Trunk Assignment Table
2202	Trunk Group Table
2301	Rate and Route Table
2302	Charge Index Expansion Table
2303	Route Index Expansion Table

2306	Line Class Code Table
2500	General Information Table
2509	Recorded Announcement Table

B. Recent Change (RC) Messages

4.08 Information on ESS forms 2100 and 2102 is recent changeable (using the A RC:L/ message) and effective immediately after the RC message is accepted by the system.

4.09 In addition, changes to routing, charging, and trunk group translations may be made using the following RC messages:

MESSAGE	EXPLANATION
A RC:CRI	Used to change a Route Index on a given code index
A RC:DIG	Used to make changes in the 3- and 6-Digit Translator
A RC:GRP	Used to change single translation words in trunk or service circuit group tables
A RC:RI	Used to change a Route Index
A RC:TRK	Used to change data associated with trunk groups.

4.10 These RC messages are recent change hunted when the A RC:RCH message is typed after a particular RC is inputted. See IM-2H200 for details.

5. NETWORK MEASUREMENTS

5.01 The usual peg count, usage, overflow, and maintenance busy traffic measurements are available for the trunks and service circuits associated with DTF coin service. In addition, the Selected Line Usage Measurements feature of the Traffic and Plant Measurement Program (PD-2H116) can be used to measure usage individual lines including coin lines. Up to 64 lines of all types can be measured at any one time.

6. AVAILABILITY

NEW INSTALLATIONS

6.01 This feature is available with any issue of a No. 2 ESS generic program.

GROWTH/RETROFIT

6.02 The DTF feature can be retrofitted as an addition to any No. 2 ESS office.

7. SUPPLEMENTARY INFORMATION

GLOSSARY

7.01 The following list defines abbreviations and nonstandard terms used in this document.

CDPR: Customer Dial Pulse Receiver

DTF: Dial Tone First

Ground Start: A line which requires a ground on the ring conductor to saturate the line ferrod as a request for dial tone

Initial Period: The initial unit of time (commonly three minutes) for which a call is charged a predetermined amount

Line Class Code: Three-character alphanumeric code that specifies a customer class of service

Loop Start: A line which requires a short on the tip and ring conductors to saturate the line ferrod as a request for dial tone

Major Class: A term used to describe an originating or terminating class of service exclusive of screening treatment

Overtime Period: The talking period after the initial period requiring an additional deposit

PD: Peripheral Decoder

Prepay: Coin service requiring an initial deposit before a call can be initiated

TEN: Terminal Equipment Number

RA: Recorded Announcement

REFERENCES

7.02 The following are major references used as the supporting documentation for this feature:

- No. 2 ESS Translation Guide, TG-2H
- PA-2H200 Office Data Tables Layout Specification
- PD-2H218 Local Charging Program Description
- PD-2H217 Coin Control Program Description
- Bell System Practices, Section 506-410-400, Single Slot Coin Telephone Sets
- Traffic Facilities Practices, Division D, Section 12d
- Input Message Manual, IM-2H200

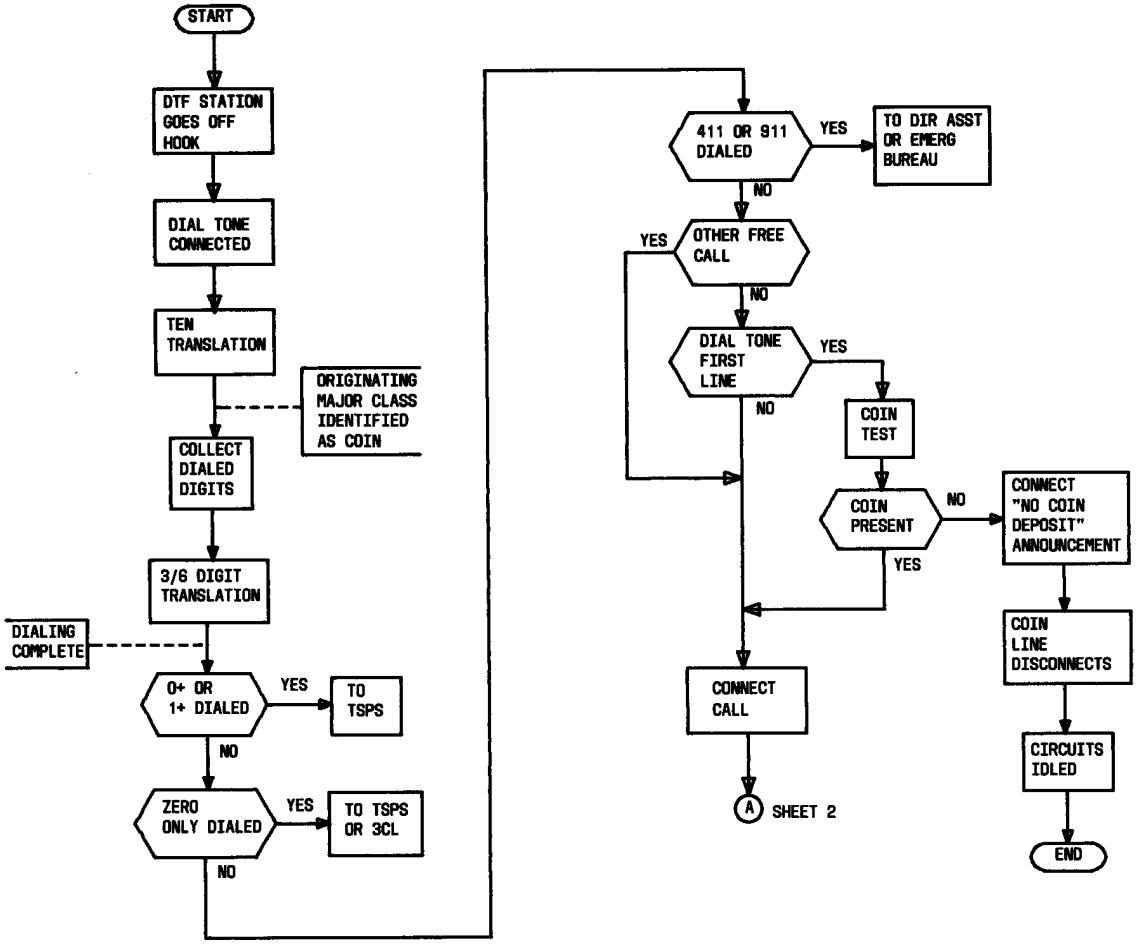

Fig. 1—Dial Tone First Feature Flow Diagram (Sheet 1 of 2) 2.09

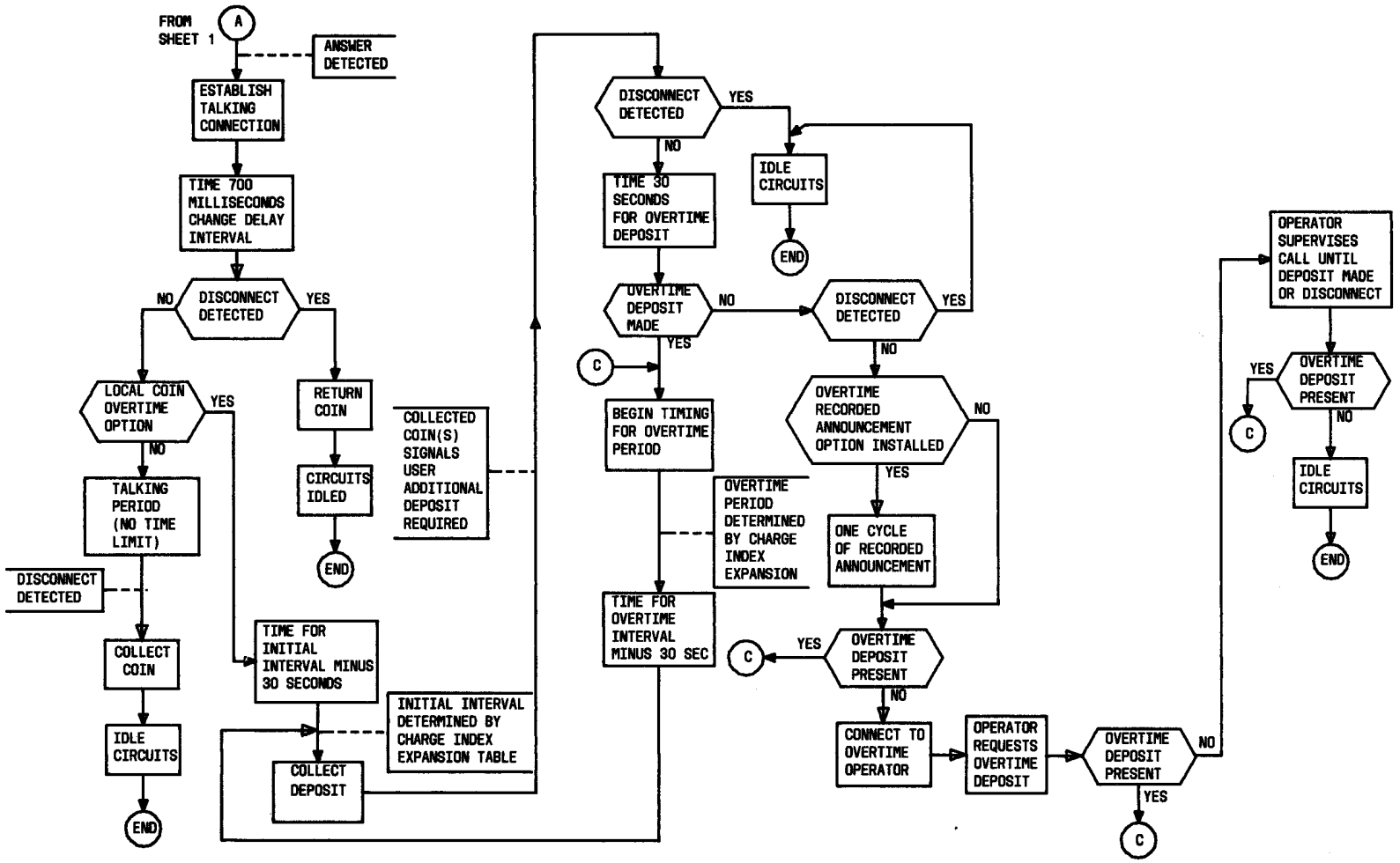

Fig. 1—Dial Tone First Feature Flow Diagram (Sheet 2 of 2) 2.09

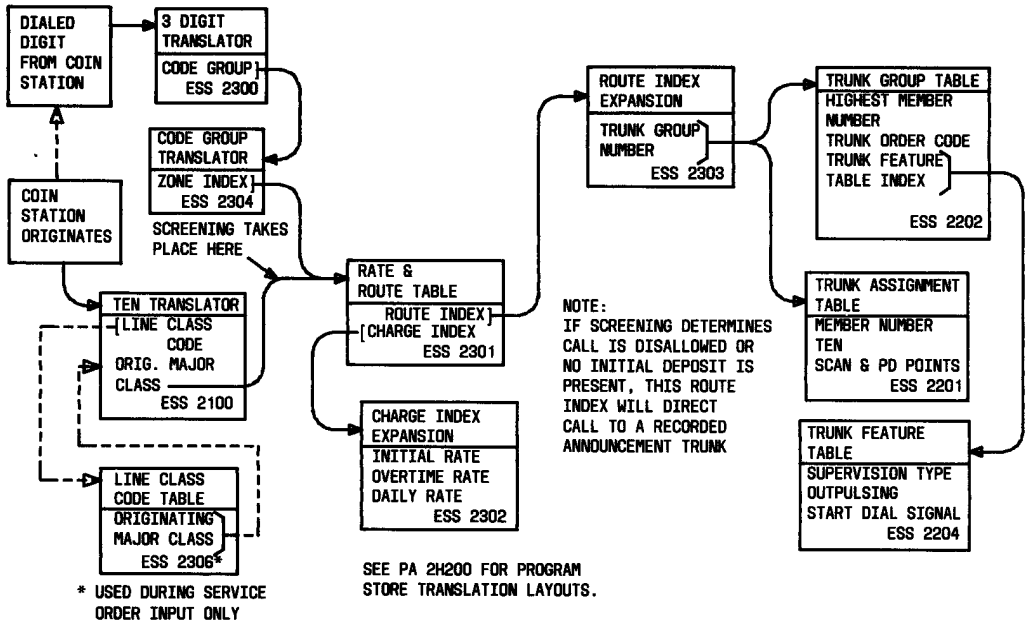

Fig. 2—Translation Flow for Dial Tone First Coin Call 4.06

TABLE A

OPERATOR TRUNK CIRCUITS (4.01)

SD NUMBER	USE	OPTION	TRUNK ORDER CODE	FRAME TYPE
2H105	Outgoing to 3CL Switchboard - Loop Supervision	X, Z	20321	U
2H110	Incoming or Outgoing to 3CL Switchboard - Loop Signaling	W	40721	U
2H112	Incoming or Outgoing to 3CL Switchboard - E&M Signaling	W or V	Various	M
2H113	Outgoing to Coin Overtime or Stuck Coin Operator	Y	21021	M
2H144	Outgoing to TSPS Operator	S	23822	M
2H151	Outgoing to Coin Zone Operator	Y	23921	M