

**FEATURE DOCUMENT**  
**BASIC COIN SERVICE**  
**NO. 2 ELECTRONIC SWITCHING SYSTEM**

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**NOTICE**

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**FEATURE DEFINITION AND DESCRIPTION****1. DEFINITION/INTRODUCTION****DEFINITION**

**1.01** Basic Coin Service is telephone service paid for by the deposit of coins in a special coin telephone usually located in a public place. It is available with the following features:

- Basic Coin Prepay Operation
- Local Untimed Charging
- Local Overtime Charging
- Coin Zone Dialing
- Various Operator Handled Calls
- Stuck Coin Administration
- Coin Station Test Line
- Dial-Tone-First Operation.

**1.02** Basic coin prepay operation is coin telephone service provided by a coin station set arranged to require the deposit of a coin (or coins) before dial tone is returned and a call can be initiated.

**1.03** Local untimed charging provides an unlimited talking period after receiving an initial deposit.

**1.04** Local overtime charging provides for an overtime charge (usually a nickel) on local calls after an initial talk period has elapsed.

**1.05** Coin zone dialing is an arrangement whereby multiple message unit calls may be dialed from a coin telephone. The area within which coin dialing is allowed is separated into zones based on the initial charge for calls to the various zones. A coin zone operator is momentarily connected to monitor the initial coin deposit and supervise overtime periods.

**1.06** Other operator handled calls are those that may be connected through a cord switchboard (3CL) or a traffic service position system (TSPS) trunk for completion through the toll network.

**1.07** The stuck coin administration features eliminate some of the inefficient aspects of resolving stuck coin conditions.

**1.08** The coin station test line feature allows installers and repairmen to test and verify loop resistance, ground resistance, loop leakage, coin collect, coin return, and coin relay timing at the coin station without assistance.

**1.09** Dial-tone-first operation enables a coin customer to dial certain calls without an initial coin deposit.

**INTRODUCTION**

**1.10** Coin telephone service may be provided in two basic ways, prepay operation as defined in 1.02 and dial-tone-first (DTF) operation. Dial-tone-first is a method that allows certain calls to be made without the initial deposit of a coin. This type of service is covered separately in Section 232-190-131. This section covers prepay coin service only and describes the various methods of charging, testing, and maintaining coin telephone service. The items defined in 1.03 through 1.08 are all a part of prepay coin service although they can also be associated with the DTF feature. Figure 1 shows the relationship of the various aspects of coin telephone service.

**1.11** Certain hardware and software additions are required to implement basic coin telephone service in a No. 2 Electronic Switching System (ESS) office. Hardware additions consist of the installation of the following:

- An engineered quantity of coin control circuits
- Various operator trunk circuits to handle toll, overtime charging, and stuck coin functions
- Optional test equipment such as the coin station test line.

Software affected includes translation tables specifying options for various coin operating features and building the required operator trunk groups. Any current issue of either LO-1 or EF-1 generic program provides the necessary program functions for this feature. Specific details for incorporating this feature into the No. 2 ESS are given in Parts 9 through 14 of this section.

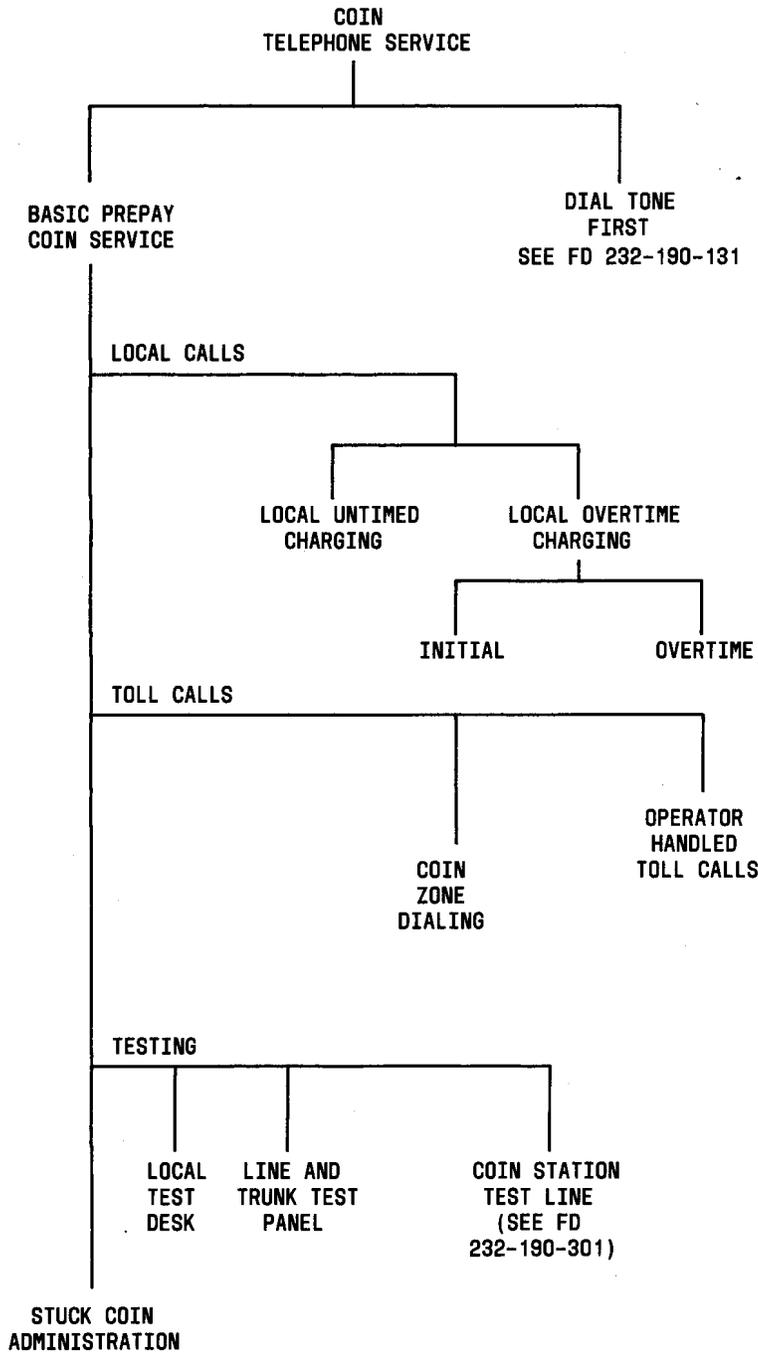


Fig. 1—Coin Operation Possibilities

2. USER PERSPECTIVE

CUSTOMER

2.01 Coin telephone service is provided to the customer by either a single or multislot coin

telephone set. In prepay operation, a coin or coins in an amount equal to the initial deposit must be inserted to obtain dial tone. Thereafter, the customer may dial any local call and may be allowed to dial toll calls depending on the charge options selected.

**Local Untimed Charging**

**2.02** A local coin call is a call within the coin customer's local calling area. One or more coins (equaling 5, 10, or 20 cents, depending on the local rate) must be deposited before the call is allowed to be completed. In prepay (coin first), the coin(s) must be deposited to obtain dial tone. There is usually no time limit on a local call. If the called customer does not answer, the deposit is returned upon disconnect.

**Local Overtime Charging**

**2.03** A local coin call with overtime is divided into two distinct periods, initial and overtime. Both periods are defined by the operating company and each may be from one to six minutes. The initial period begins after the called party answers. Thirty seconds before the end of the initial period, the initial deposit is automatically collected by the No. 2 ESS. This collection is an indicator to the coin customer that the period is near completion and he must either disconnect or deposit the overtime rate (usually five cents) in order to continue the call.

**2.04** At the expiration of the initial period, the No. 2 ESS tests the coin station for the overtime coin deposit. If the deposit is present, the call is marked in overtime and is allowed to continue for the overtime period. If the coin is not present, the call is optionally routed to a coin overtime announcement or a coin overtime monitoring operator. The calling and called parties may continue to talk until the operator answers. Upon answer, the operator asks the coin customer for the overtime deposit. If the deposit is verified, the operator disconnects and the call assumes its previous talking state in the overtime period. If the deposit cannot be obtained, the operator can split the connection so that the calling and called parties cannot talk to each other. The same actions occur at the termination of each overtime period.

**2.05** If desired, the No. 2 ESS can be arranged to provide an announcement only, with no connection to an overtime operator. At the end of announcement period, a coin test is made. If a coin is present, the call continues for the overtime period. If the deposit is not present, the call is taken down. See Section 232-190-023 for details on coin overtime announcement arrangements.

**Toll Charging**

**2.06** A call from a coin telephone to a point outside the local calling area is a toll call. The several methods of toll charging available interact with the customer in different ways as described in the following paragraphs.

**Manual Operator**

**2.07** All customers have access to an assistance operator by dialing "0". It is a No. 2 ESS option as to whether the initial deposit is returned or retained. The operator (either 3CL or TSPS) places the call, requests required coin deposits, and supervises the call for overtime or disconnect. If TSPS is available, the customer may dial the called number. Both the calling and called number are available to the TSPS operator in addition to rate information calculated by the TSPS. With this information, the operator requests the initial rate and monitors the coin deposits. A TSPS operator is also connected to announce the end of the initial period and to request and collect the overtime deposit.

**Coin Zone Dialing**

**2.08** A coin zone call is a call made by a coin customer to a point outside the local calling area. When a coin zone call is initiated by a coin customer, the routing and charge information is determined from the called office code. As soon as dialing is complete, the coin customer is connected to a coin zone operator trunk. The operator is alerted when one of eight rate lamps associated with the trunk is lighted. The operator requests the required coin deposit and then releases the connections. The call proceeds from outputting to ringing. A 700-millisecond charge delay interval is initiated after the called customer answers. If there is no answer, the coins are returned upon disconnect. After the charge delay interval, the initial charge period is timed and can be one to six minutes. Thirty seconds before the end of the initial charge period, the deposited coins are automatically collected by the ESS. If the call continues after the initial charge period, the No. 2 ESS determines the overtime charging rate. The No. 2 ESS connects both the called and coin customers via a coin zone trunk to an operator and alerts the operator to the overtime charge by flashing a rate lamp. The operator can request the overtime charge immediately or can tell the

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coin customer to signal by flashing when the call ends. The operator supervises the call during the entire overtime period.

### TELEPHONE COMPANY

**2.09** Coin stations may be tested to a limited extent from the No. 2 ESS Trunk Test Panel (TTP). DC conditions on the line conductors may be observed including the presence or absence of a coin in the hopper. The station may also be rung from the TTP.

**2.10** Extensive manual testing of coin stations must be performed from a No. 14 or 16 Local Test Desk or a No. 3 Local Test Cabinet. From these positions the following test functions can be performed:

- Coin Collect
- Coin Return
- Operate and Nonoperate current requirements of the coin relay
- Precision resistance measurements of the loop and station ground.

**2.11** The Coin Station Test Line feature allows installation or repair forces to make the following operational tests without tying up local test desk facilities or requiring the services of an operator:

- Coin detection and ground removal (single slot sets)
- Ground and loop resistance
- Loop leakage
- Coin collect
- Coin return
- Coin relay operating time.

The Coin Station Test Line feature is capable of testing rotary or TOUCH-TONE® dial stations.

**2.12** The Coin Station Test Line feature consists of a self-contained single circuit unit which requires no system intervention after a test

connection is established. In order to utilize the coin test line circuit in No. 2 ESS, an interface circuit is required between the trunk network and the test line circuit. The test line should be used in conjunction with the coin station routine outlined in the Coin Maintenance Check booklet, Section 506-900-503 or Section 506-100-130.

**2.13** The test is initiated at a coin station by depositing the prescribed initial rate and then dialing a designated 7-digit directory number. The maintenance personnel then proceeds as described in the documents referenced in 2.12. Test results are returned to the maintenance personnel in the form of coded tones or a series of rings.

**2.14** See Section 232-190-201 for a complete description of the coin station test line.

### 3. SYSTEM PERSPECTIVE

#### Software Data Structures

**3.01** Software for basic coin service is provided in the generic program and in the translation memory area. Any current issue of either LO-1 or EF-1 generic program can provide this feature. Translation areas that must be considered when implementing this feature are as follows:

- General Information Table (ESS Form 2500)
- Line Translations (ESS Form 2100, 2102)
- Charge Tables (ESS Form 2302)
- Trunk and Service Circuit Related Data (ESS Form 2201, 2202)
- Routing and Screening Data (See Figure 2).

**3.02** Figure 2 shows the interrelation of translation data involved in processing a call dialed from a prepay coin station. As an aid to understanding the translation process, the flow is presented from the point of view of the translation forms rather than the actual structure of translations in program store. For referencing actual word layouts in program store see PA-2H200. Specific details for providing translation data is given in Part 12 of this section.

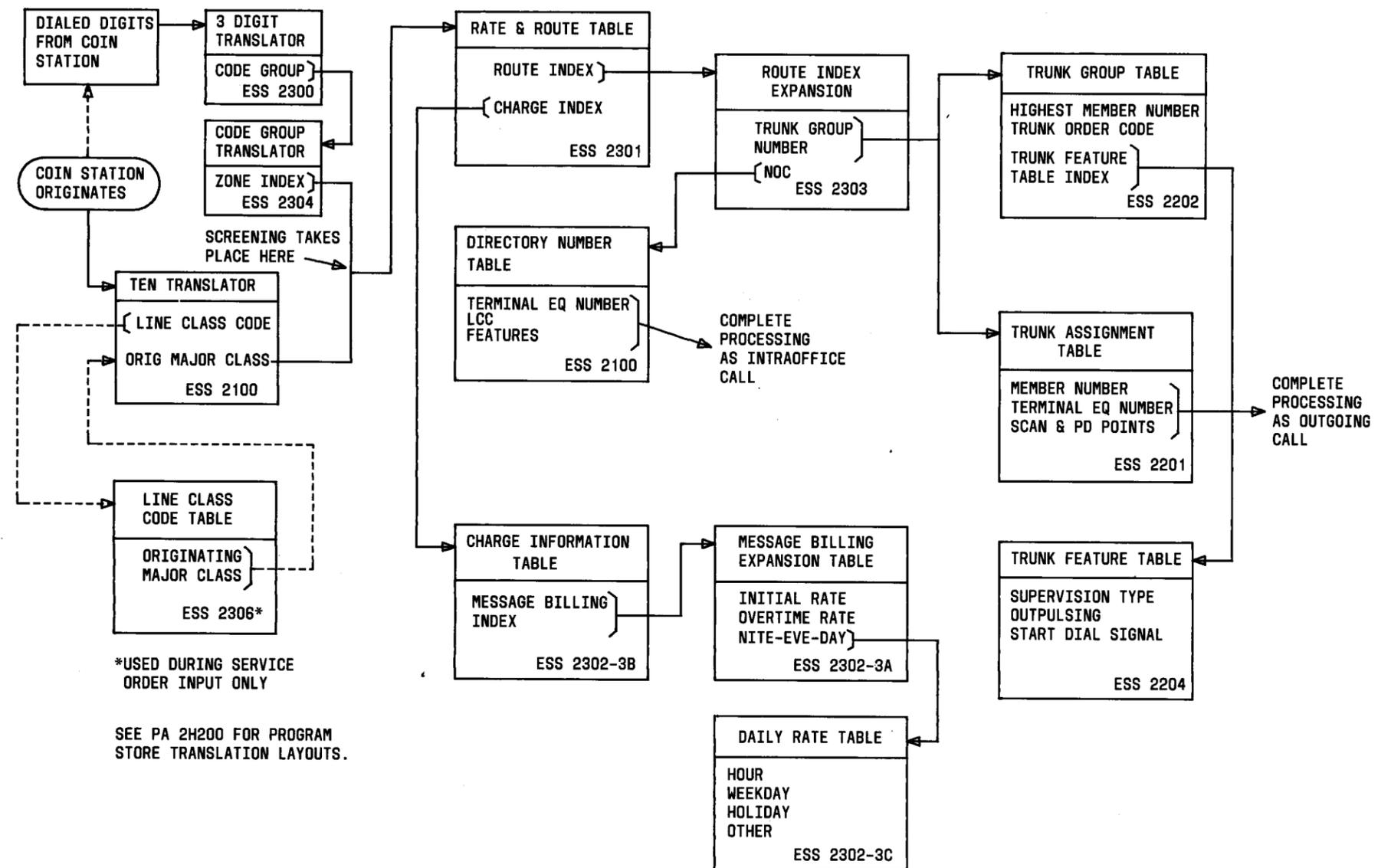


Fig. 2—Translation Flow for Prepay Coin Call

**Hardware**

**3.03** Hardware items that must be considered when providing this feature are:

- Terminal Equipment Number (Line and Trunk Switch Frame)
- Coin Control Circuit
- Coin Station Test Line and Test Port
- Operator Trunk Circuits
- Recorded Announcement Channel.

**3.04** Each prepay coin circuit requires one terminal equipment number (TEN) on the line and trunk switch frame circuit modified for ground start. Only TENS with even numbered switch level numbers may be wired for ground start.

**3.05** A quantity of SD-2H125 Coin Control Circuits must be provided. These circuits have one TEN appearance each and comprise service circuit group number 011.

**3.06** If the coin station test line is to be provided, a Test Line Coupler Circuit (SD-2H159) and a Coin Station Test Line Circuit (SD-1C297) must be installed. See Section 232-190-201 (Coin Station Test Line feature) for details.

**3.07** Various operator trunk groups needed (e.g., Coin Zone Local Overtime and Assistance Operators) require a quantity of SD-2H105 and/or SD-2H110 trunk circuits. See Part 12 of this section for information on arranging and assigning these trunk groups.

**3.08** If a coin overtime announcement is required as described in 2.04, a recorded announcement channel must be provided. This necessitates creation of a recorded announcement service circuit group with one or more SD-2H119 audible ring and announcement circuits as its members. These circuits are connected to a channel on the SD-1A139 recorded announcement frame that contains the appropriate recording.

**FEATURE OPERATION****General**

**3.09** Prepay coin stations are wired to close a dc loop when the handset is removed from the switchhook. In addition, a resistance ground is placed on the tip conductor when the initial deposit is deposited. In the No. 2 ESS, the line ferrod is wired for ground start operation. When a call originates, the customer removes the handset. Since no current flows in the ground start ferrod nothing happens at this point. When the coin(s) are deposited, the ferrod saturates and is interpreted by the No. 2 ESS as a request for dial tone. When dial tone is returned, the call proceeds as a normal call through dialing and outpulsing or ringing. The local charging programs are entered in various stages of the call to charge the call as determined by the charge index. The charge index is an output of the translation programs and is derived from the calling line's class of service and the 3-digit dialed office code. The Local Charge Program is involved three times during the processing of a call. These entries are as follows:

- At the completion of dialing to check the charging information and if required to set up timing entries for the various call types (to be described later)
- After called party answers to activate timing entries
- After disconnect to conclude charging and to clear any timing entries.

**Local Coin Call**

**3.10** A local coin call is a call within the coin subscriber's local calling area which can be either timed or untimed as described in 3.11. No time limit on the call exists when overtime charging is not required. The charge index in translations determines if timing is required for the call.

**Local Untimed Charging**

**3.11** A local untimed coin call proceeds as a normal call up to answer detection. This call may be intraoffice or interoffice. At answer recognition, a 700-millisecond charge delay interval is timed before the call is considered a charge call. If the calling subscriber disconnects before the end of the charge delay period, the coin deposit is returned and the call is removed from the system. Once the charge delay period is over and the calling and called subscribers are in the talking

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state, no further action is needed until recognition of a disconnect. At disconnect the coin deposit is collected.

### Local Overtime Charging

**3.12** This type of coin call proceeds as previously described for local coin calls, until the end of the charge delay interval. After the charge delay, the No. 2 ESS system initiates a stable timing entry (STE) for an initial interval predetermined by the operating company. This and all other intervals discussed have a one-second tolerance and can be 1, 2, 3, 4, 5, or 6 minutes. Should the call terminate prior to 30 seconds before the end of this timing interval, the coin deposit is collected, and the call is removed from the system.

**3.13** Thirty seconds before the timing interval ends the STE times out and the coin deposit is collected. This alerts the customer that an additional deposit is required if uninterrupted conversation is to continue. After the coin collect, the system continues timing the interval. This is to permit an additional deposit to be made, or for the parties to terminate their conversation. Should the call terminate during the last 30-second interval, a coin return is initiated before restoring the coin line to the idle state.

**3.14** If the call remains in the talking state and the end of the timing interval is reached, then a test for coin deposit is made. If a coin is present, the system reinitiates a timing interval for the overtime period. This overtime period is also determined by the operating company and is not necessarily the same length as the initial period. Subsequent actions are the same as those described above. If a coin is not present when the coin test is made at the end of the timing interval, the calling coin line and the called subscriber are connected to an overtime monitoring operator, after a recorded announcement, for request of an additional deposit if conversation is to continue. The operator disconnects when satisfied that an additional deposit has been made. A coin test is then made, and if a coin is found present, the overtime period timing is initiated as previously described. If a coin is not present at the time of operator disconnect and the calling and called subscriber are still off-hook, then the same operator is alerted by flashing the overtime monitoring lamp. If office options specify no overtime operator, the call is taken down if no deposit is present after the recorded announcement.

The overtime monitoring functions are described in more detail in 3.15.

### Overtime Monitoring Operator

**3.15** The local coin overtime and stuck coin trunk is seized when a local coin call is going into an overtime period without an additional coin deposit. The request for an additional coin deposit is indicated to the operator by steadily lighting the overtime monitoring lamp. Upon operator answer, this lamp is extinguished and a talking state is established between the calling coin subscriber, the called subscriber, and the operator. During this 3-way conversation, the operator has four signals that may be sent to the local office. These signals are interpreted by the program and are recognized by means of a directed scan for four ferroids in the trunk circuit. The four signals are:

(a) Split Talking Connection Signal—The operator initiates this signal by inserting a cord in the associated splitting jack of the trunk or by operating a splitting key, depending on the type of switchboard. The No. 2 ESS system recognizes this signal and places the operator trunk circuit in a condition so that the operator may talk to either party, but the calling and called subscriber cannot talk to each other.

(b) Coin Control Signal—The operator may signal for a collect or a return of coin deposit. The operator initiates a coin control request by placing the coin key in the collect or return position and then operating the ring key, or just by placing the coin key in the collect or return position, depending on the switchboard arrangement. On recognition of this signal, the local office attempts the specified request. If a coin is present during application of the coin control current, a coin present signal is indicated to the operator by lighting the coin supervisory lamp. If no coin is present, the coin supervisory lamp is not lit.

(c) Recall Signal—The operator initiates this signal by operating the ring key and having the coin key in the off position. On recognition of this signal, the No. 2 ESS office determines the state of the originating coin line and applies ringing current if this line is on-hook, or, if off-hook, the system applies receiver off-hook (ROH) tone. Audible ring is not returned to the operator. Upon operator release of this

signal, the ringing or ROH tone is removed. During the above actions, the called subscriber, if any, will be kept connected to the operator.

(d) **Disconnect Signal**—The operator initiates this signal by removing the answering cord. At recognition of operator disconnect, if the coin and called subscriber are both off-hook, a test for coin presence is performed. If a coin is present, the call will return to the original talking connection, and the operator trunk is released. If a coin is not present during this coin test, then the same operator is resealed and alerted to a no-coin-in-hopper (NCH) condition. This signal is given by flashing the overtime monitoring lamp at a 60-ipm (interruptions per minute) rate. If the calling subscriber is on-hook when the operator disconnects, then the call is dropped from the system.

**3.16** When a coin collect or return action fails to detect a coin at the conclusion of any timing period, the overtime monitoring trunk is seized. The operator is alerted to NCH condition. The NCH signal is a flashing, 60-ipm, overtime monitoring lamp. Once the calling and called subscribers are connected to the operator, the preceding four operator functions are applicable.

#### **Stuck Coin Operator**

**3.17** If desired, the No. 2 ESS can be arranged to handle stuck coin conditions manually via an operator. The stuck coin operator is physically in the same trunk position (SD-2H113-01) and trunk group as the overtime monitoring operator in a local office where the overtime option exists. The operator is seized for stuck coin conditions only at completion of the call. The operator is signaled by means of a stuck coin lamp. A flashing stuck coin lamp at 60 ipm indicates to the operator that the coin is to be collected, and a steady lamp indicates coin return.

**3.18** The operator tries to eliminate the stuck coin condition by requesting collect or return functions. As long as a coin is present, the coin supervisory lamp is lit during the coin collect or return. If this lamp is not lit after a coin collect or return function, then the operator assumes the stuck coin condition has been cleared.

**3.19** In an office that does not time local coin calls, there are no overtime monitoring

operator alerts; therefore, the trunks are seized only for the stuck coin and NCH conditions. The NCH case has been discussed previously in 3.15 and 3.16 and may be handled in the same way.

**3.20** Also when there are no overtime monitoring operator alerts, the switchboard may be optionally arranged so that only the stuck coin lamp and the stuck coin and release jacks are provided. In this arrangement the NCH signal is routed to the stuck coin lamp by the switchboard option, and is identical to the stuck-coin-on-collect signal to the operator (flashing stuck coin lamp). The operator distinguishes between the two alerts by attempting a coin collect. If the coin supervisory lamp lights, the alert is assumed to have been made for a stuck coin. An NCH alert is assumed if the lamp does not light. The entire stuck coin function may be omitted in offices where there are no overtime monitoring operator alerts by not defining the trunk group, by defining the group with no members, or by marking all members out-of-service. In each of these cases, the stuck coin or NCH alert will cause a TTY message to be printed.

**3.21** The stuck coin operator has six signals that may be sent to the local office. The coin control (collect or return) signal, recall signal, and split talking connection signal are the same as previously described for the overtime monitoring operator. The release signal must precede the disconnect signal if the operator desires to release the coin line from this connection. The release signal is activated by operation of the release key or by inserting a cord in the release jack. It is recognized only for a stuck coin seizure condition. The disconnect signal (removal of the answer cord) for the stuck coin seizure must be preceded by the release signal or it will be recognized as a mistake, and the operator will be alerted again with the stuck coin indicator. For an NCH seizure, the disconnect signal is treated in the manner described in 3.17 and 3.18. The split talking connection signal is applicable only when the alert is due to an NCH condition on the collect during a local overtime or coin zone call. Both the calling and called parties must be connected to the operator.

#### **TOLL CALLS**

**3.22** The No. 2 ESS has two general methods of handling toll calls (calls outside the local

calling area). These are coin zone dialing and operator handled toll calls.

### Coin Zone Dialing

**3.23** A coin zone call is an allowable coin-dialed call to a point outside the local charge area. The initial period rate may vary from 10 cents through an undetermined maximum amount. The charges associated with any given coin zone operator trunk group are set by the operating company. A coin zone operator trunk appearance at a switchboard has an associated group of eight rate lamps, each of which indicates a specific charge to the coin zone operator. A local office may have more than one coin zone operator trunk group to select from, thus giving a wider range of charge conditions.

**3.24** At completion of dialing, when it is found that a coin subscriber has initiated a coin zone call, the No. 2 ESS determines the routing and charge information from the called office code. The charge information is a combination of an initial charge and timing interval and an overtime charge and timing interval. At dialing completion, the program is arranged, optionally, to return or to retain the initial deposit prior to the coin zone operator connection. The initial coin zone operator connection is not required, as a local office option, if the initial period charge is 10 cents.

**3.25** From the charging information, a coin zone trunk is selected and seized if required. The operator is alerted to an initial period seizure condition by a steady lighting of one of eight distinct rate lamps. This lamp indication informs the operator of the required initial deposit and interval. During the seizure of the coin zone trunk and initial seizure signal, the calling coin subscriber is receiving audible ring. If the calling line disconnects before the operator answers the initial seizure signal, the coin deposit, if retained, is returned and the call is removed from the system.

**3.26** At operator answer, the switchboard extinguishes the rate lamp, audible ringing is removed, and operator and coin subscriber is placed in a talking state. The operator requests the proper deposit, or additional deposit, for the initial period.

**3.27** During this initial connection to the coin zone operator, the operator may send any of the following four signals and expect the local

office to take some action. The coin zone operator procedure necessary to activate these signals is similar to that described for the overtime monitoring operator. The No. 2 ESS recognizes these signals by means of a directed scan of four ferroids associated with the trunk circuit.

- **Collect Coin Signal**—During the initial operator connection, the operator is not allowed to collect a coin deposit. System reception of this signal indicates an operator error; therefore, the signal is ignored.
- **Return Coin Signal**—Upon receipt of this signal, the local office applies coin return potential to the calling coin line. If a coin deposit is present, an indication of this is given to the operator by lighting the coin supervisory lamp. If no coin deposit is present, no signal is given to the operator.
- **Rering Signal**—During the initial connection, this signal, initiated by operating the ring key, is a request to release the talking connection between the operator and coin subscriber. Upon receipt of this signal, the local office removes the talking connection, return the initial coin deposit if any, and restore the coin line to the idle state.
- **Disconnect Signal**—The operator initiates this signal by removing the answering cord from the answer jack. If the rering signal has preceded the disconnect signal or if the coin subscriber is on-hook, the system returns the operator to the idle condition and then return the coin. If the coin subscriber is still off-hook and connected to the operator, then this signal permits the call to advance to the ringing (if intraoffice call) or the outpulsing (if interoffice call) state. The operator is returned to an idle condition.

**3.28** After successfully passing through the initial coin zone operator connection, the call proceeds, barring busy or blocked conditions, through the outpulsing state to a ringing state set up by a distant office, or directly to a ringing state if an intraoffice call. During the ringing state, the No. 2 ESS waits for an answer signal from the called end. When the system recognizes the called subscriber answer, a 700-millisecond charge delay is initiated. After the charge delay

interval has elapsed, the system starts timing the initial interval.

**3.29** The No. 2 ESS provides initial timing intervals of 1, 2, 3, 4, 5, or 6 minutes. Any one of these six timing intervals can be associated with any one of eight possible charge rates. For example, one charge condition might be a 20-cent initial charge with a 3-minute initial interval, and another condition might be a 20-cent initial charge with a 1-minute initial interval.

**3.30** Should the calling coin subscriber disconnect prior to the start of the initial timing interval, the coin deposit is returned and the call is removed from the system.

**3.31** The initial period coin deposit is collected automatically by the No. 2 ESS system 30 seconds before the end of the initial timing period. This collection serves as a warning to the talking subscribers that the initial period is coming to an end. Should the call terminate before the time-out, (initial timing period minus 30 seconds) then the coin deposit is collected and the call is removed from the system. If the call should terminate after the initial coin deposit has been collected but before the end of the initial timing period or before operator answer at the beginning of the overtime period, then any coin deposit made after the initial collection is returned, and the call is removed from the system.

**3.32** At the end of the initial timing period, the system determines the overtime charging rate from charging information stored in the translation area of program store. A coin zone trunk is seized, and the operator is alerted to an overtime condition by flashing one of the eight distinctive rate lamps at a 120-ipm rate. Upon operator answer, the flashing rate lamp is extinguished and a 3-way talking state is established between calling coin subscriber, called subscriber, and operator. At this time, the operator informs the calling coin subscriber that the initial period has expired and to signal at end of conversation for overtime charge collection. The coin zone operator times the call during the overtime period.

**3.33** Upon being signaled and informed that the call has ended, the operator computes the overtime charges and requests a deposit from the calling coin subscriber. After verifying that the proper amount has been deposited, the operator

sends a collect signal to the No. 2 ESS system for collection of the additional deposit. If the coin is present in the hopper when coin collect current is applied, the coin supervisory lamp lights to indicate coin presence. After both the calling line and the operator have disconnected, the system tests the calling coin line for a coin presence indication. If a coin deposit is present, it is then collected. This is done to insure a collection if the operator should fail to collect before releasing from the connection.

**3.34** During the overtime period, calling coin subscriber supervision is transmitted to the operator via the cord supervisory lamp. A flash signal by the calling subscriber causes the system to flash the cord supervisory lamp. Should the coin line disconnect during the overtime period, the operator cord supervisory lamp lights. The connection between the operator and calling coin subscriber is retained.

**3.35** If the called subscriber should disconnect before the calling coin subscriber, no indication is given to the coin zone operator. The system releases the connection, after flash timing, if necessary, between the operator and called subscriber. The operator to calling coin subscriber connection is retained.

**3.36** If, during the overtime period, the operator should disconnect before the calling coin subscriber disconnects, the distinctive rate lamp reappears as a flashing signal, which is an indication to the operator that an error has been made. All existing connections to the operator trunk are retained.

**3.37** During the overtime period, the coin zone operator may send any of the following four signals to the coin zone trunk. As previously mentioned, these signals will be detected by means of a directed scan of four ferroids.

- Collect Coin Signal—Upon receipt of this signal, the local office attempts to collect a coin deposit and indicate coin presence to operator if a coin deposit is found. This is done by lighting the coin supervisory lamp. If a coin deposit is not present, then the coin supervisory lamp is not lit.
- Return Coin Signal—Upon receipt of this signal, the local office will apply coin return

potential to the calling coin line. If a coin deposit is present, an indication of this is given to the operator by lighting the coin supervisory lamp. If a coin deposit is not present, then the lamp is not lit.

- **Rering Signal**—If the calling coin line is off-hook when this signal is received, the local office will apply receiver off-hook tone to the calling line. Upon operator release of signal, the tone is removed. If the calling coin line is on-hook when the signal is received, ringing current will be applied to the calling line. Upon operator release of the rering signal, the ringing is removed.
- **Disconnect Signal**—If the calling coin line is off-hook when the signal is received, the local office recognizes this as an operator error and flashes the predetermined rate lamp. All existing connections are retained. If the calling coin line is on-hook when the operator disconnects, then the system, upon recognition of this, will release the existing network connections and idle the operator trunk. A collect coin deposit is initiated before idling the calling coin line.

**Operator Handled Toll Calls**

**3.38** Provision for completing toll calls may be made on a manual basis by providing a trunk group to a 3CL toll switchboard. Routing in the No. 2 ESS translations is arranged so a customer dialing "0" is connected to the switchboard via this trunk group. The operator completes the call and performs the timing and billing function on a manual basis. Local assistance, person-to-person, collect calls, and credit card calls are also completed by the 3CL operator.

**3.39** When a TSPS is available, operator services involving toll calls may be provided by this means. When a customer places a toll call from a coin station, the instructions on the telephone direct that the complete called number (area code if any, and 7-digit telephone number) be dialed. The No. 2 ESS connects the call to a TSPS trunk and forward the calling and called number to the TSPS. On a station-to-station call, the TSPS connects an idle position and gives the initial charge and time period for the call on a numerical display. The operator may then request the proper deposit, monitor to see that the deposit is made, and allow

the call to proceed. The TSPS initiates timing when the called party answers and alert the operator a short time before the initial period elapses. The initial deposit is automatically collected and the operator notifies the customer that the call is going into the overtime period. When the call is concluded, the TSPS calculates and indicates time and charges to the operator.

**3.40** If the calling customer is on-hook, the operator rings the station. After monitoring the deposit of the overtime charges, the operator depresses a key which signals that the coins are to be collected and releases her position.

**3.41** Person-to-person, collect calls, and credit card calls are handled in a similar manner with the operator remaining on the call as necessary to supervise the progress of the call.

**3.42** On all operator handled calls, the initial deposit can either be returned or retained, selectable by office option. If the deposit is retained, it is figured into any subsequent charges or is returned upon disconnect on an uncompleted call.

**3.43** A feature flow diagram giving the functional operation of an originating coin call in No. 2 ESS is shown in Figure 3.

**Testing**

**3.44** A limited amount of testing of coin stations can be performed in the No. 2 ESS using the Trunk Test Panel. Tests such as line leakage, continuity and ringing may be made.

**3.45** More complete testing of coin stations is performed at the No. 14 or 16 Local Test Desk or No. 3 Local Test Cabinet. From these positions, functions such as coin collect and return, coin relay operational tests, and ringing may be performed.

**3.46** The coin station test line is a facility which enables an installer or repairman to test the operation of a coin station without the aid of the Repair Bureau.

**3.47** To access the test line, the user deposits a coin and dials the number assigned to the test line coupler circuit. When the connection is established, a coin present and a ground removal test is made. The user receives the results of

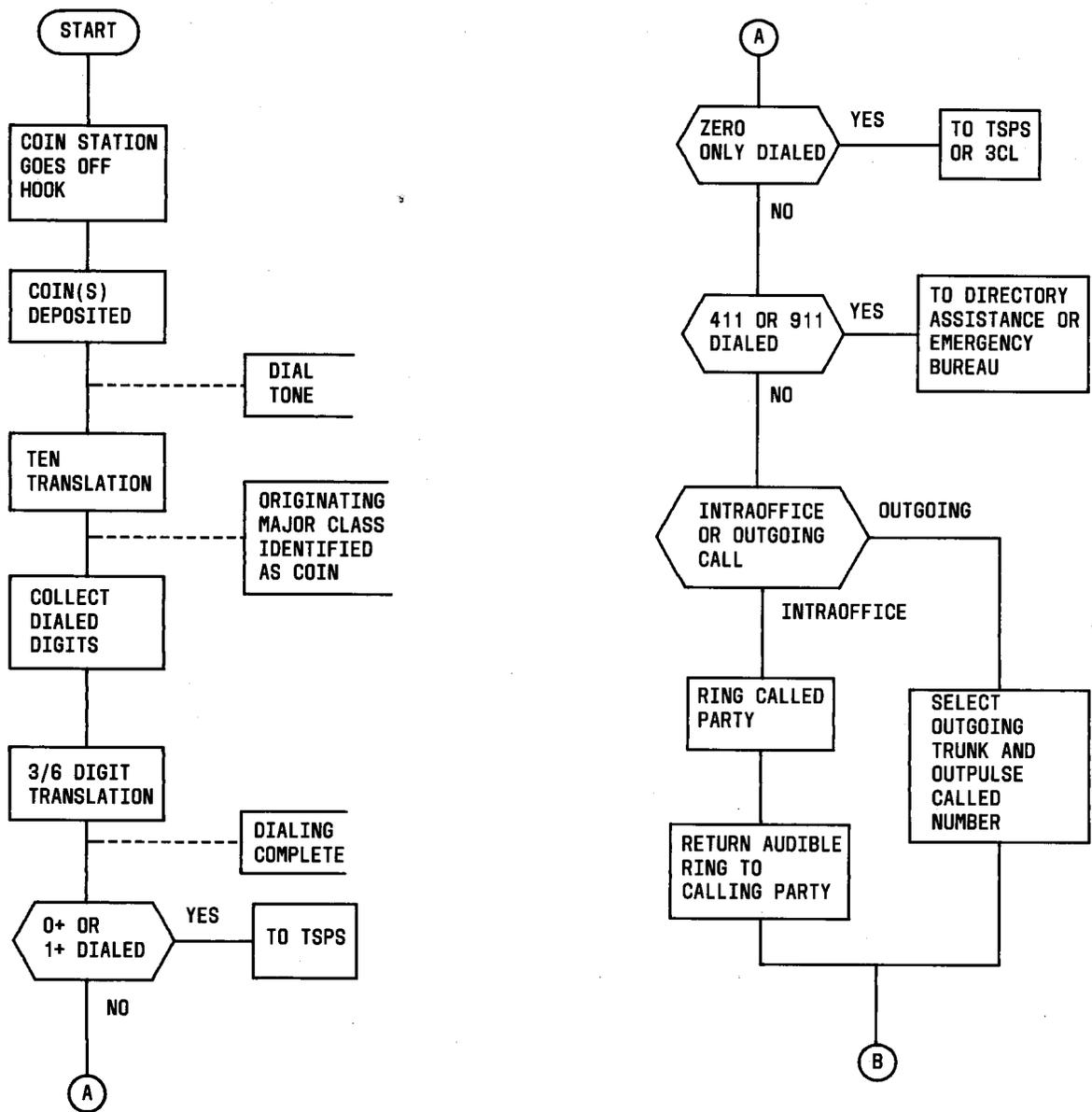


Fig. 3—Basic Coin Service Feature Flow Diagram (Sheet 1 of 2)

the ground removal via audible coded tones. Ground removal occurs when the presence of a coin is detected. Upon receipt of interrupted dial tone, the user selects one of four tests by dialing the appropriate digit. The results of the tests are returned via coded tones and signals. Interrupted dial tone is returned at the end of each test sequence if the user is still off-hook. If no other testing is desired, an on-hook by the user terminates the tests. The coin is not collected when testing via the coin station test line.

3.48 A complete description and method of implementation of the coin station test line is found in Section 232-190-201.

### FEATURE ATTRIBUTES

#### 4. APPLICABILITY

4.01 Basic Coin Service is provided in No. 2 ESS on a per-line basis.

## 5. LIMITATIONS AND RESTRICTIONS

### Operational

- 5.01 Coin lines cannot be range extended or assigned to a centrex group.
- 5.02 Postpay coin operation is not available in No. 2 ESS.

### Assignment

- 5.03 Because of ground start requirements, TENS with even numbered switch levels (last digit) must be assigned to coin lines.

## 6. COMPATABILITY AND INTERACTIONS

- 6.01 See Part 10 for coin telephone set compatibility requirements.

## 7. COST FACTORS

### Memory

- 7.01 Each coin line requires two words of program store translation area.
- 7.02 The service circuit group for the coin control circuits and each of the operator trunk groups require the following quantities of program store translation area.
  - Trunk Group Data Table: Eight words per trunk group
  - Trunk Circuit List: One word per trunk plus three words per trunk group
- 7.03 One line class (three program store words) must be provided to define prepay coin class of service.
- 7.04 Call store requirements consist of one call store status block per trunk group. The size of the block is dependent on the number of members per trunk group with a maximum size of 36 words (LO-1 Program) or 20 words (EF-1 Program).
- 7.05 Other related memory requirements are the remainder of translation tables related to routing and charging. This is dependent on the

particular office routing plan rather than the total number of coin lines.

### Hardware

- 7.06 A number of SD-2H125 coin control circuits must be provided. Each circuit must have four peripheral decoder points and three master scan points assigned. See Part 11 for determination of the quantity of coin control circuits.
- 7.07 Each coin line must be provided with a TEN modified for ground start on the line and trunk switch frame.
- 7.08 The necessary hardware items for the local overtime, coin zone, and assistance operator trunks are one TEN and one trunk circuit per trunk. The specific trunk circuit for each type of operator trunk is given in Part 11 of this section.
- 7.09 If a recorded announcement is required after the initial period is over (Local Overtime Charging), a channel on the recorded announcement frame must be assigned to trunk group 023. If all six recorded announcement channels are already in use, another recorded announcement frame must be installed.

### Processor Time

- 7.10 Processor time data as applies to this feature is not available at this time.

## 8. AVAILABILITY

- 8.01 Basic Coin Service is available in any STD or A&M rated generic program.

## **CONSIDERATIONS FOR INCORPORATION OF FEATURE INTO SYSTEM**

## 9. PLANNING

- 9.01 The sequences of hardware, software, and/or station modifications will be covered in Part 13 of this section.

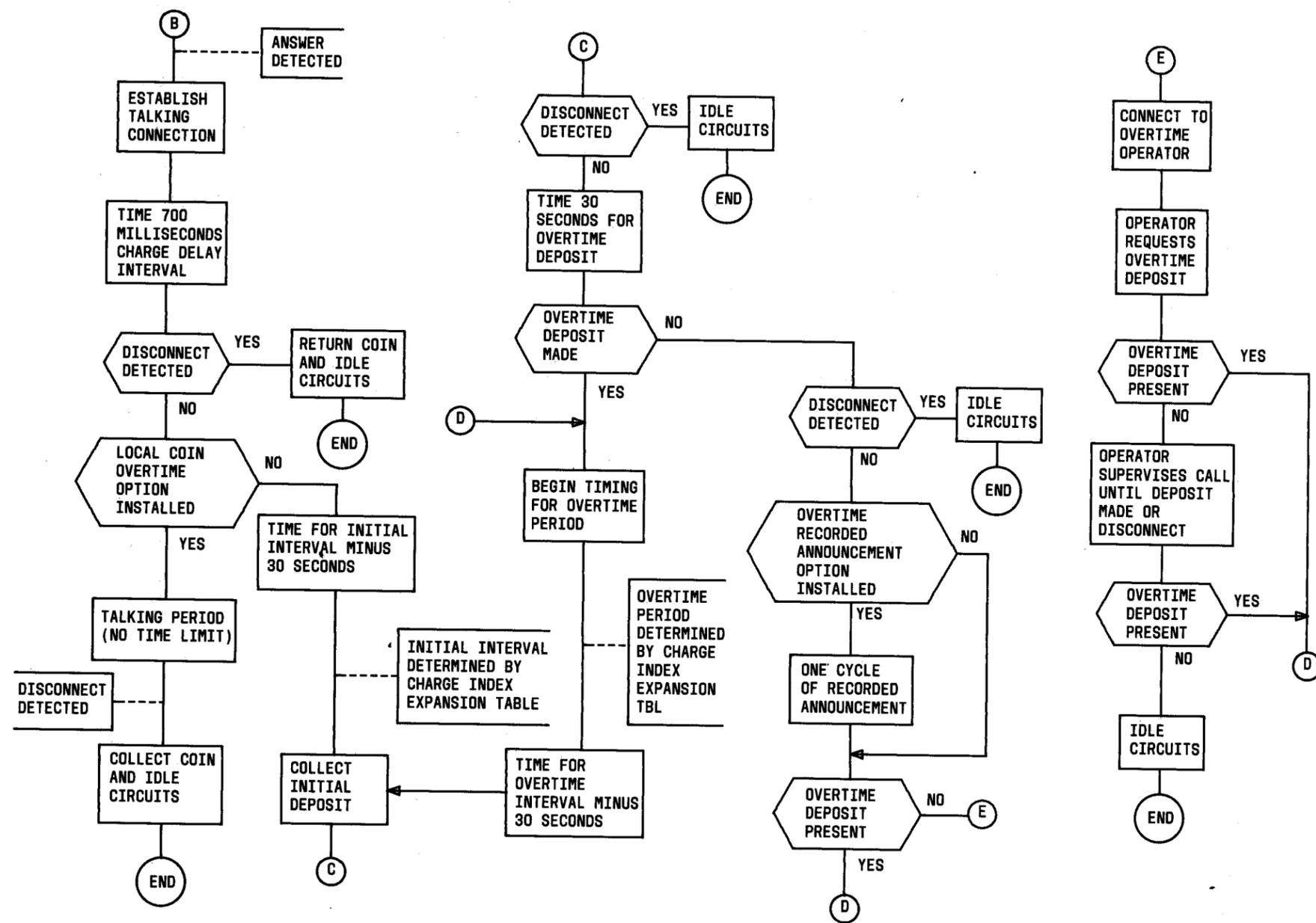


Fig. 3—Basic Coin Service Feature Flow Diagram (Sheet 2 of 2)

**10. HARDWARE**

**10.01** The following coin telephone sets may be used with a No. 2 ESS:

- Type 200 3 Slot
- Type 1C1 Single Slot
- Type 2C1 Dial Pulse
- Type 1C2 Single Slot
- Type 2C2 TOUCH-TONE

**10.02** To equip a No. 2 ESS office for Basic Coin Service, the following hardware items must be installed:

- Coin Control Circuits (SD-2H125)
- Trunk Circuits for various operator services (see Table A)

Optional items are as follows:

- Coin Station Test Line (SD-1C297)
- Test Line Coupler (SD-2H159)
- Recorded Announcement Channel (Part of SD-1A139). If this item is required for

Local Coin Overtime and all six channels on an existing machine are already assigned, an additional recorded announcement machine must be provided

- Audible Ring and Announcement Circuit (SD-2H119)

**10.03** The complete hardware engineering data for all No. 2 ESS trunk and service circuits can be found in the Trunk and Service Circuit Engineering Specification J2H031A-1 (Gold Book). This specification is a compilation of circuit drawing and specification drawing information for standard applications of trunk circuits for various central office trunking arrangements.

**10.04** Division D, Section 12d of the Traffic Facilities Practices identifies by type, order code, schematic drawing, and functional use all of the trunks and miscellaneous circuits that may be used in a No. 2 ESS. Both types of trunk frames (miscellaneous and universal) used for mounting and controlling these units are also covered in detail.

**10.05** A summary of drawing numbers, trunk order codes, power requirements, and frame mounting space for coin related trunks and service circuits is given in Table A.

TABLE A  
COIN FEATURE HARDWARE

CIRCUIT	SCHEMATIC DRAWING NUMBER	J-NUMBER	TRUNK ORDER CODE	POWER REQUIREMENTS	2" MOUNTING PLATES PER UNIT	CIRCUITS PER UNIT	REMARKS
Coin Control Circuit	SD-2H125	2H018DL-1	62100	+130, -130 +24V, -48V	1	1	
2-Way Trunk	SD-2H112	2H018CB-1	50901	+24, -48	2	2	TSP, TSPS, or 3CL Recording Completing or Toll Switching Operator Multifrequency Coin Control*
Outgoing Trunk	SD-2H105	2H018BA-1	20301	+24, -48	1	1	3CL Recording Completing Operator DC Coin Control**
2-Way Trunk	SD-2H110	2H017CA-1	48101	+24, -48	1	4	3CL Recording Completing or Toll Switching Operator Multifrequency Coin Control*
Outgoing Trunk	SD-2H113	2H018BD-1	21001	+130V, -130V +24V, -48V	2	1	3CL Stuck Coin or Coin Overtime Operator-Multifrequency Coin Control*
Outgoing Trunk	SD-2H151	2H018BL-1	23901	+130V, -130V +24, -48	3	1	3CL Coin Zone Operator
Test Line Coupler	SD-2H159	2H018FP-1	76700	+24, -48	1	2	
Coin Station Test Line	SD-1C297	93025A	None		10	1	

\* Use if switchboard is in distant building

\*\* May be used if switchboard is in same building

**11. DETERMINATION OF QUANTITIES**

**Hardware**

**11.01** Worksheets and detailed instructions for determining quantities of coin control circuits is found in Traffic Facilities Practices, Division D, Section 12-c.

**11.02** Determining quantities of all other operator trunks required is part of planning the overall trunking job for the office. Details are found in Section 232-190-024 Trunking Arrangements and Traffic Facilities Practices, Division D, Section 12d.

**11.03** A summary of the method for finding quantities of trunk and service circuits required is outlined in the following paragraphs.

**11.04** One coin station test line and its associated test line coupler circuit is usually sufficient unless unusual testing conditions exist and it is desired to provide more than one. This allows simultaneous testing by more than one repairman.

**Memory**

**11.05** The program store and call store memory requirements for a No. 2 ESS is determined by a great many factors that include the coin features. These factors and the methods for calculating memory requirements are found in Traffic Facilities Practices, Division D, Section 12f2 (for program store) and Section 12f3 (for call store). Also see Part 7 (COST FACTORS) of this section for specific words needed to implement this feature.

**12. ASSIGNMENTS AND RECORDS**

**Assignment Recommendations And Guidelines**

**12.01** The coin control circuit service circuit group must be assigned to Trunk Group Number 011. Operator trunk group numbers must be assigned as follows.

- Coin Zone Operator 058-061
- Stuck Coin and/or Coin Overtime Operator 062

Other operator trunks such as TSPS and 3CL assistance are assigned trunk group numbers in

the same manner as other trunk groups. See Section 232-190-024 for trunk group number assignment rules.

**12.02** Even numbered TENs only must be assigned to coin lines. Only TENs with even numbered switch levels may be modified for ground start.

**Input And Record Keeping**

**12.03** The following Translation Input Forms are affected by Basic Coin Service when submitting to the WECO Regional Center for the initial office data administration (ODA) run. Figure 2 of Part 3 shows the purpose and relationship of the forms. Refer to TG-2H for details and other information required to complete these forms.

FORMS	TITLE
2100	Directory 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

**12.04** Information on ESS form 2100 is recent changeable (using the A RC:L/ message) and effective immediately after the RC message is accepted by the system. See Sections 680-536-010 and 680-536-011 for details on line recent change procedures.

**12.05** 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

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- 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.

**12.07** These RC messages are recent change hunted when the A RC:RCH message is typed after a particular RC is inputted. See Sections 232-118-102, 232-118-103, and IM-2H200 for details.

**Uniform Service Order Codes**

**12.08** The Uniform Service Order Code (USOC) recommended for use on ESS Form 2306 and on service orders is 1PC for public coin stations and 1SP for semipublic coin stations.

**13. NEW INSTALLATION AND GROWTH**

**13.01** Basic Coin Service may be provided in offices equipped with any current generic program. An ODA run may or may not be needed depending on the availability of spare trunk groups for the various operator services. Also if the coin control circuits have not been installed or the proper office parameters have not been specified on ESS Form 2500, an ODA run is necessary.

**13.02** The general method for adding coin related trunk groups to an office is as follows:

- (1) Install necessary cross connects for each trunk in the group on the applicable distributing frames.
- (2) Check Trunk Feature Table (Form 2204) for a valid combination of trunk attributes applicable to the trunk group being built. If no usable combination exists, one may be built using the A RC:GRP message if the office has the EF-1 generic (see IM-2H200). For LO-1 generic this must be done via ODA.
- (3) Change the data in the spare Trunk Group Table (Form 2202) using the A RC:GRP message.

- (4) Move trunk members from one trunk group to another (Form 2201) using the A RC:TRK message.
- (5) Complete routing and charging translations as necessary. (Three-digit codes and route indices may be changed using the A RC:RI and A RC:DIG messages.)
- (6) Complete testing as described in Part 14 of this section.

**13.03** The method for adding new trunks to an existing trunk group is as follows:

- (1) Complete necessary distributing frame cross connects.
- (2) Move the new trunk members to the new group (A RC:TRK message).
- (3) Complete testing as described in Part 14 of this section.

**14. TESTING**

**14.01** All trunks and service circuits associated with coin service can be tested at the No. 2 ESS Maintenance Center using the maintenance TTY and the trunk test panel. Refer to Section 232-003-301 (Section 232-303-301 for 2B ESS) for TTY operating procedures and Section 232-130-301 for Trunk Test Panel Tests and operating procedures.

**14.02** Testing of coin lines may be performed at the No. 3 Local Test Cabinet or the No. 14 or 16 Local Test Desk. Tests such as coin collect and return, ringing tests coin magnet tests, and station ground tests are available.

**14.03** Tests to verify translation information in the No. 2 ESS consist of the various verify messages at the TTY. The following are some of these messages and their purpose:

MESSAGE	EXPLANATION
A VY:L/	Originating and terminating line translation
A VY TRK:	Trunk translations
A VY SVC:	Service circuit (i.e., coin control) translations

- A VY DAY! Type of day
- A VY:GRP: Trunk group translations.

Refer to Input Manual IM-2H200 for information pertaining to the variable fields of these messages. Output Manual OM-2H200 provides the interpretation for the response to these messages.

**14.03** A general method to verify that a coin station is properly installed is described below:

- Verify the line translation information using the A VY:L/ message and compare the TTY output to office records.
- Test the coin station from the LTD or No. 3 Test Cabinet for correct coin collect and return functions in addition to checking coin relay operate current and call through functions.
- If the coin station test line is installed, tests may be performed by the installer at the coin station itself. Methods for using this feature may be found in the Coin Maintenance Check booklet, Section 506-900-503 or 506-100-130.

**14.04** All features of Basic Coin Service not directly related to coin stations may be tested as described in the following paragraphs.

**14.05** Verify all coin related trunk and service circuit groups using the messages given in 14.03. Compare the TTY response with office records to insure the proper data has been inputted to translations by recent change messages and/or ODA.

**14.06** Make overall trunk tests on coin related trunks and service circuits using the trunk test panel and TTY. Section 232-002-511 describes operational trunk tests that may be used and IM-2H200 Input Manual provides diagnostic test request messages for the service circuits.

## 15. MEASUREMENTS

**15.01** Peg count, usage, overflow, and maintenance busy traffic measurements are available for the trunks and service circuits associated with basic 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 on individual lines including coin lines. Up to 64 lines of all types can be measured at any one time.

## 16. CHARGING

**16.01** The various coin charging arrangements are specified for a No. 2 ESS office on ESS Form 2302. Initial deposit and overtime deposit amounts are entered on this form. In addition if calls are zoned, different charging rates for day, evening, and night periods may be specified. There is a provision to define which hours of the day constitutes day, evening, and night and if any particular day is a week day or a holiday. See TG-2H for further details.

**16.02** Toll charging may be handled by means external to the No. 2 ESS by various methods depending on the system of connecting calls to the toll network. Either a 3CL or TSPS supervises the coin collect or return functions. Manual billing records must be prepared in the case of a collect call handled at a 3CL.

## SUPPLEMENTARY INFORMATION

### 17. GLOSSARY

**17.01** 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

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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

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

TEN—Terminal Equipment Number

RA—Recorded Announcement.

### 18. REASONS FOR REISSUE

18.01 This is the initial issue of this document.

### 19. REFERENCES

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

- No. 2 ESS Translation Guide, TG-2H
- J2H031A Trunk and Service Circuit Engineering Specification
- PA-2H200 Office Data Tables Layout Specification
- PD-2H218 Local Charging Program Description
- PD-2H217 Coin Control Program Description
- CD- & SD-2H125 Coin Control Circuit
- Section 506-410-400 Single Slot Coin Telephone Sets
- Traffic Facilities Practices, Division D, Section 12
- Input Message Manual, IM-2H200
- Output Message Manual, OM-2H200
- Section 232-190-201 Coin Station Test Line
- Section 232-118-102 Recent Change Procedures (LO-1)
- Section 232-118-103 Recent Change Procedures (EF-1)
- Section 232-190-023 Announcement Arrangements
- Section 232-190-131 Dial-Tone-First Coin
- Section 680-536-010 Service Order Procedures (LO-1)
- Section 680-536-011 Service Order Procedures (EF-1)