

FEATURE DOCUMENT
INTERFACE WITH MJ AND MK MOBILE RADIOTELEPHONE
SYSTEMS, SUBSCRIBER LOOP MULTIPLEXER SYSTEM,
LOOP SWITCHING SYSTEM, AND 1A LINE CONCENTRATOR SYSTEM
NO. 2 ELECTRONIC SWITCHING SYSTEM

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NOTICE

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

1.01 The MJ and MK Mobile Radiotelephone Systems provide customer-dialed 2-way telephone service between mobile subscribers within a given coverage area and all land-line subscribers. Mobile stations are typically located in automobiles, trucks, trains, airplanes, or on board a vessel.

1.02 Line concentrator systems, such as the Subscriber Loop Multiplexer, the Loop Switching System, and the 1A Line Concentrator, can be connected between most switching systems and the telephone equipment of certain remotely located customers. Line concentrators are devices which provide outside plant facilities on a long range basis in lieu of placing additional cable. Typical applications are for mobile home parks, rural subdivisions, resort areas, and replacement of small community dial offices. Their use on a short range basis to temporarily defer major capital expenditures is also important.

1.03 Interface features for mobile radiotelephone systems and subscriber line concentrator systems specify the interconnections required to operationally combine these systems with a switching system.

1.04 The connections from these systems to a switching system consist of the customer lines, either an all trunks busy (ATB) or an all channels busy (ACB) indication, and various alarm monitors. The subscriber line concentrators require a sleeve lead for each line.

INTRODUCTION

1.05 The interface requirements of the MJ/MK Radiotelephone Systems, the Subscriber Loop Multiplexer, the Loop Switching System, and the 1A Line Concentrator are combined in this document since, from a No. 2 Electronic Switching System (ESS) standpoint, the requirements are similar. Unique requirements for a particular system are noted where applicable.

1.06 The interface feature is available in No. 2 ESS offices with either the LO-1 or EF-1 generic programs. The translations required for

the feature can be incorporated in an office with either an office data administration (ODA) run or recent change (RC) messages.

1.07 Call processing and maintenance and test limitations (see Part 5, LIMITATIONS AND RESTRICTIONS) exist with the Loop Switching System and the 1A Line Concentrator. Because of these interface problems, the Loop Switching System and the 1A Line Concentrator are **not recommended** for use with No. 2 ESS offices with the LO-1 or EF-1 generic programs. Future generic programs will provide compatible operation between these systems and No. 2 ESS.

1.08 Maintenance and test limitations also exist with the Subscriber Loop Multiplexer. However, this system processes calls properly and **is recommended** for use with No. 2 ESS offices with the LO-1 or EF-1 generic programs.

1.09 No interface problems exist between the MJ/MK Radiotelephone Systems and No. 2 ESS offices with the LO-1 or EF-1 generic programs.

2. USER PERSPECTIVE**TELEPHONE COMPANY****A. MJ/MK Mobile Radiotelephone Systems**

2.01 The interface feature allows mobile radiotelephone system customers to be served via a No. 2 ESS. The operation of the MJ and MK Radiotelephone Systems (subsequently referred to as MJ or MK system) are essentially identical except that the MJ system can interface with customers who have the manual push-to-talk systems, whereas the MK system cannot. The MJ system operates in the VHF band; the MK system operates in the UHF band.

2.02 The major elements of the MJ/MK system are the base station control terminal, the base station radio equipment, and the mobile equipment. The MJ/MK system is available in two sizes. The large size system provides a maximum of 480 customer lines (in multiples of five) over up to eight channels (Figure 1). The small size system provides up to 90 customer lines over a maximum of two channels.

2.03 The MJ/MK system provides customer-dialed, 2-way telephone service between mobile

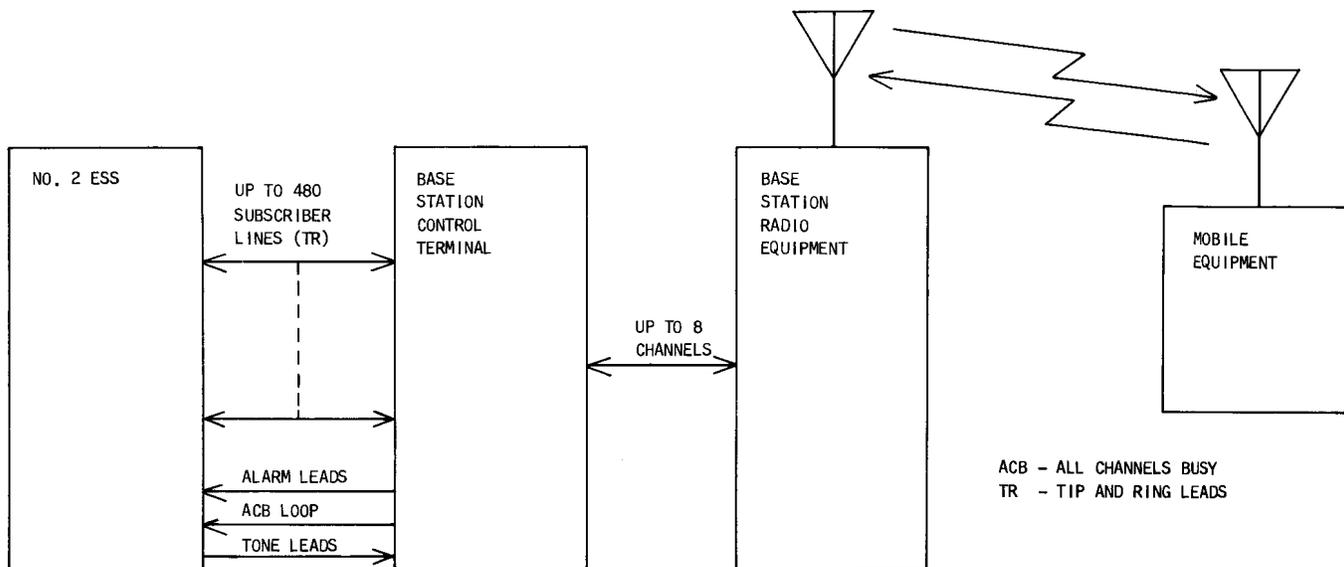


Fig. 1—MJ/MK Mobile Radiotelephone System—No. 2 ESS Interface

customers within a given home coverage area and between mobile customers and all land-line customers. (Small systems utilizing only one channel cannot provide mobile-to-mobile home area service.) Calls to and from mobiles visiting from foreign MJ/MK systems are placed manually by the mobile service operator.

2.04 When within the home coverage area, the mobile customer may have any special services (except 2-party and multiparty) which do not require flashing of the switchhook. These include speed calling, call forwarding, special toll billing (QZ), denied origination, denied termination, series completion, special billing, free line, and call trace. The MJ/MK system interprets flashing of the switchhook as a disconnect.

2.05 When all MJ/MK system channels are busy, an ACB indication from the MJ/MK system to a scan point is provided. The No. 2 ESS then routes terminating traffic to regular overflow tone or to busy tone.

2.06 Major and minor alarms are connected to the No. 2 ESS from the MJ/MK system. High tone, audible ringing, and operating power are supplied by the No. 2 ESS office.

2.07 More detailed descriptions of the MJ/MK systems are provided in references A(1) and A(2) in Part 19.

B. Subscriber Loop Multiplexer

2.08 The interface feature allows certain customers to be served by the No. 2 ESS through a Subscriber Loop Multiplexer (SLM). The SLM is a combined digital carrier and loop switching system for subscriber loop service. The system provides 24 low-loss, low-noise, digitally derived channels shared by 80 customer lines. The SLM consists of a control terminal (CT) located in the central office and up to six remote terminals (RTs) located near the customers (Figure 2). A minimum of two RTs is required for full SLM capacity since one RT can interface with a maximum of 40 customer lines.

2.09 Where traffic density permits, the SLM system may be used to serve individual, 2-party, and multiparty lines in any combination. Two prepay or dial tone first coin lines per RT (six maximum per system) may be provided. Except for prepay coin lines, **ground start lines cannot** be used with the SLM system.

2.10 When all 24 SLM channels are busy, an ACB indication from the SLM to a scan point is provided. The No. 2 ESS then routes all

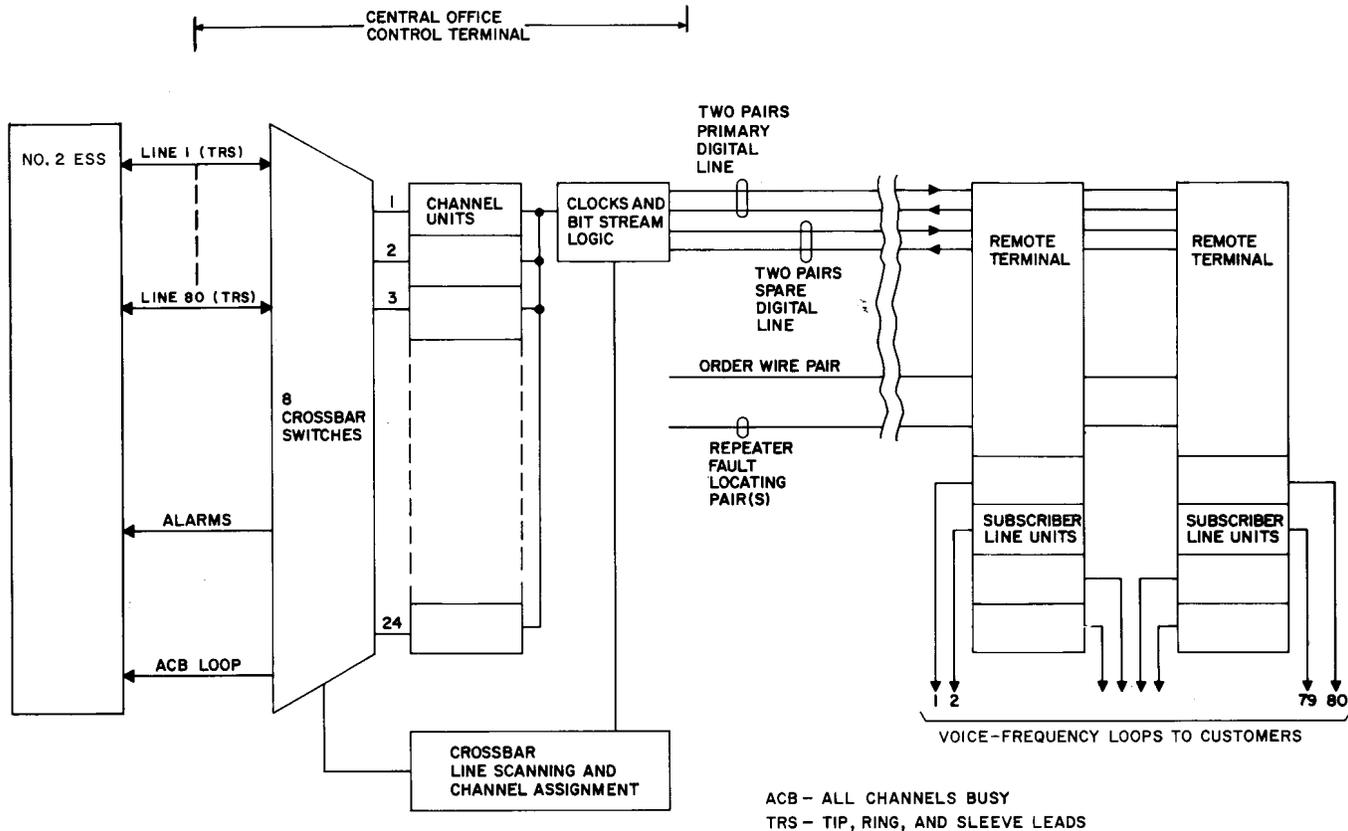


Fig. 2—Subscriber Loop Multiplexer—No. 2 ESS Interface

terminating calls to regular overflow tone or to busy tone. The SLM utilizes a built-in traffic counter.

2.11 The SLM provides the No. 2 ESS with major, minor, and service alarms. High tone, audible ringing, and operating power (if desired) are supplied by the No. 2 ESS office.

2.12 More detailed descriptions of the Subscriber Loop Multiplexer are provided in references B(1) and B(13) in Part 19.

C. Loop Switching System

2.13 The interface feature allows certain customers to be served by a No. 2 ESS through a Loop Switching System (LSS). Interface problems exist between the No. 2 ESS and the LSS (refer to Part 5, LIMITATIONS AND RESTRICTIONS). The LSS concentrates 96 customer lines into 32 trunks and is easily expandable to 192 lines and 64 trunks. The LSS consists of a CT in the central

office and one or two RTs near the customers (Figure 3). The two 96-line systems (A and B) may utilize one RT, as shown, or they may use two RTs (one per 96 lines) in different locations.

2.14 The LSS uses a graded multiple switching technique where each group of four lines has access to only seven of the thirty-two trunks. These seven trunks are multiplexed to other groups of four lines in a manner that minimizes trunk commonality between line groups and maximizes traffic capacity.

2.15 Where traffic density permits, the LSS may be used to serve individual, 2-party, multiparty, and coin lines in any combination. The LSS can be used with loop start and ground start lines. Any services available in the office may be provided via the LSS.

2.16 When all seven trunks associated with a group of four lines are busy but all four lines within the group are not necessarily busy

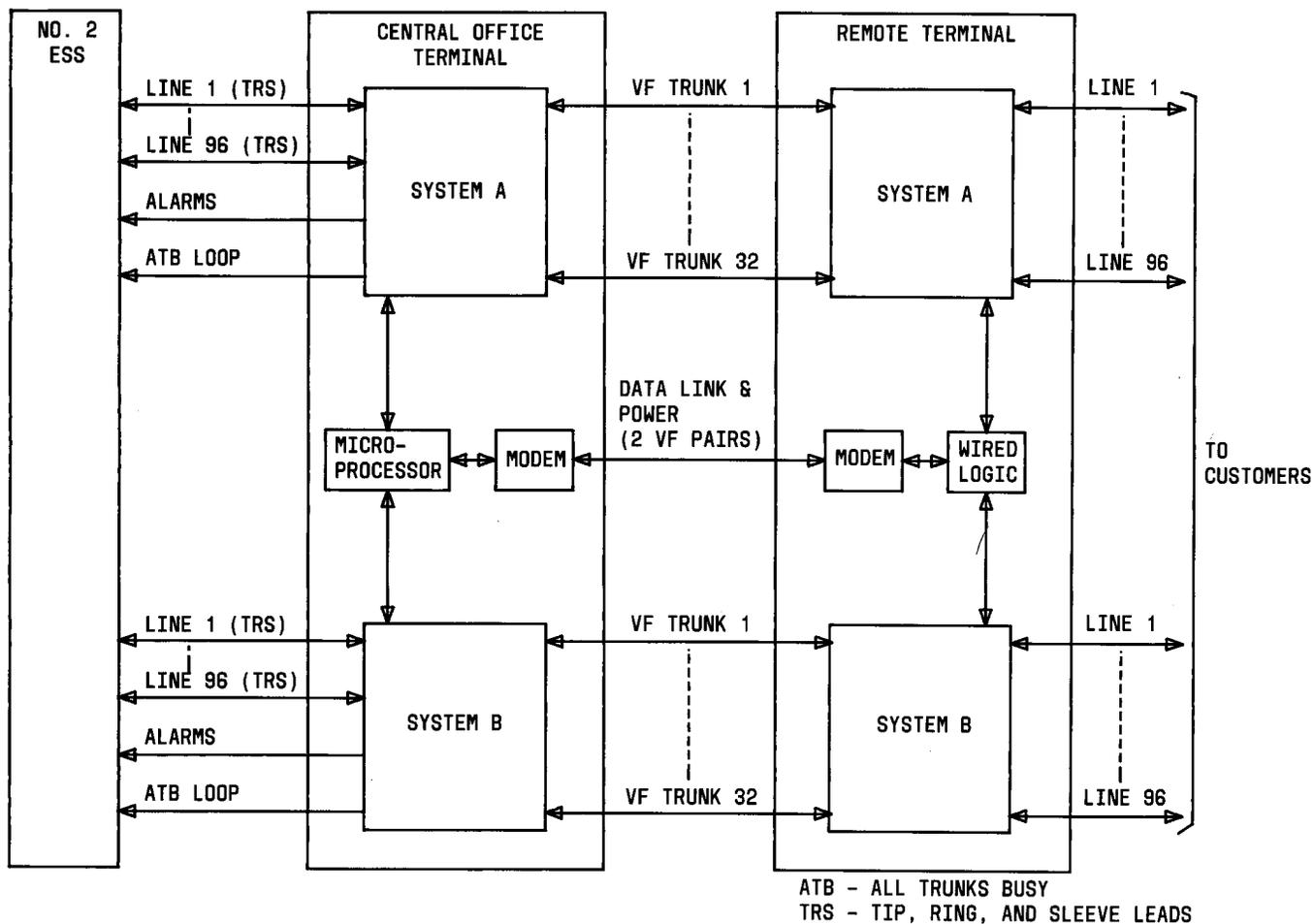


Fig. 3—Loop Switching System—No. 2 ESS Interface

(i.e., the seven trunks can be tied up by other lines which also have access), the LSS provides an ATB indication to a scan point. Terminating calls directed to one of these lines are routed to overflow tone or to busy tone by the No. 2 ESS.

2.17 Major and minor alarms are provided by the LSS to the No. 2 ESS. High tone, audible ringing, and operating power (if desired) are supplied by the No. 2 ESS office.

2.18 More detailed descriptions of the Loop Switching System are provided in reference C(1) in Part 19.

D. 1A Line Concentrator

2.19 The interface feature allows certain remotely located customers to be served by the No.

2 ESS through a 1A Line Concentrator. Interface problems exist between the No. 2 ESS and the 1A Line Concentrator (refer to Part 5, LIMITATIONS AND RESTRICTIONS). The concentrator is an electromechanical device which provides a flexible, economical substitute for a customer cable plant. By utilizing a 5-to-1 concentration ratio, the 1A Line Concentrator allows a large number of low-usage customer lines to be connected to the central office via a few high-usage trunks. The concentrator consists of a control unit (CU) in the central office and one or two remote units (RU) located in the vicinity of the customers. The CU is capable of operating with up to 100 lines from the central office and either one 20-trunk, 100-line RU or two 10-trunk, 50-line RUs (Figure 4).

2.20 Where traffic density permits, the 1A Line Concentrator may be used to serve individual,

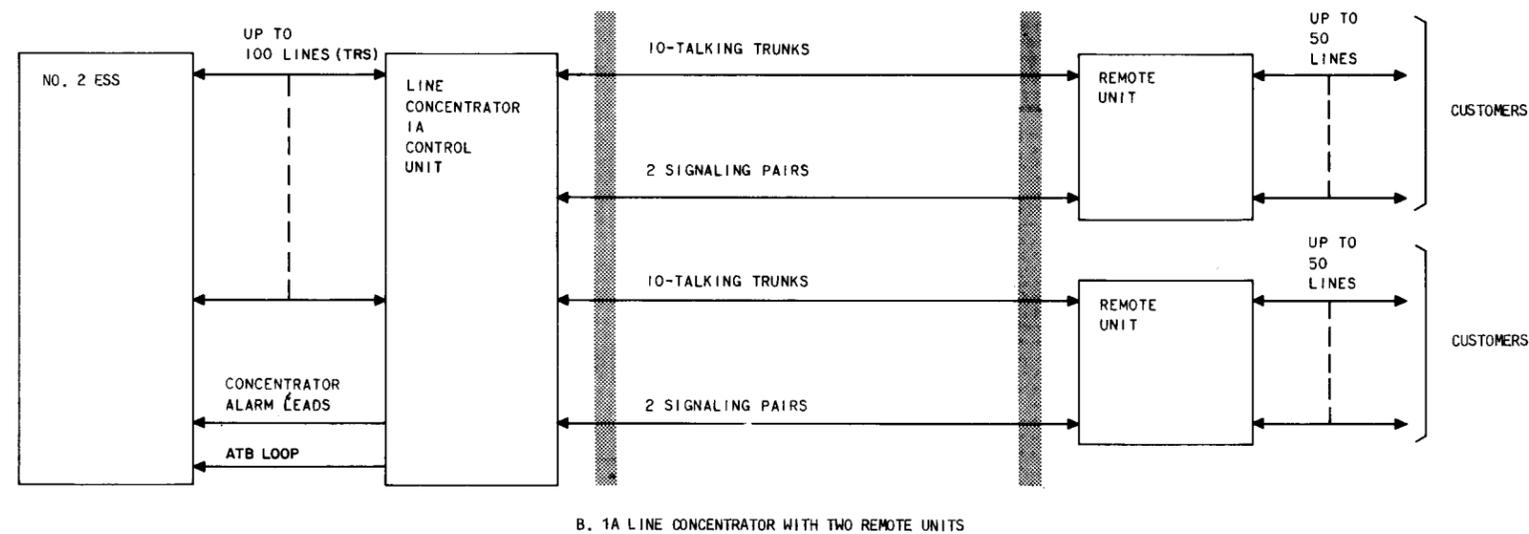
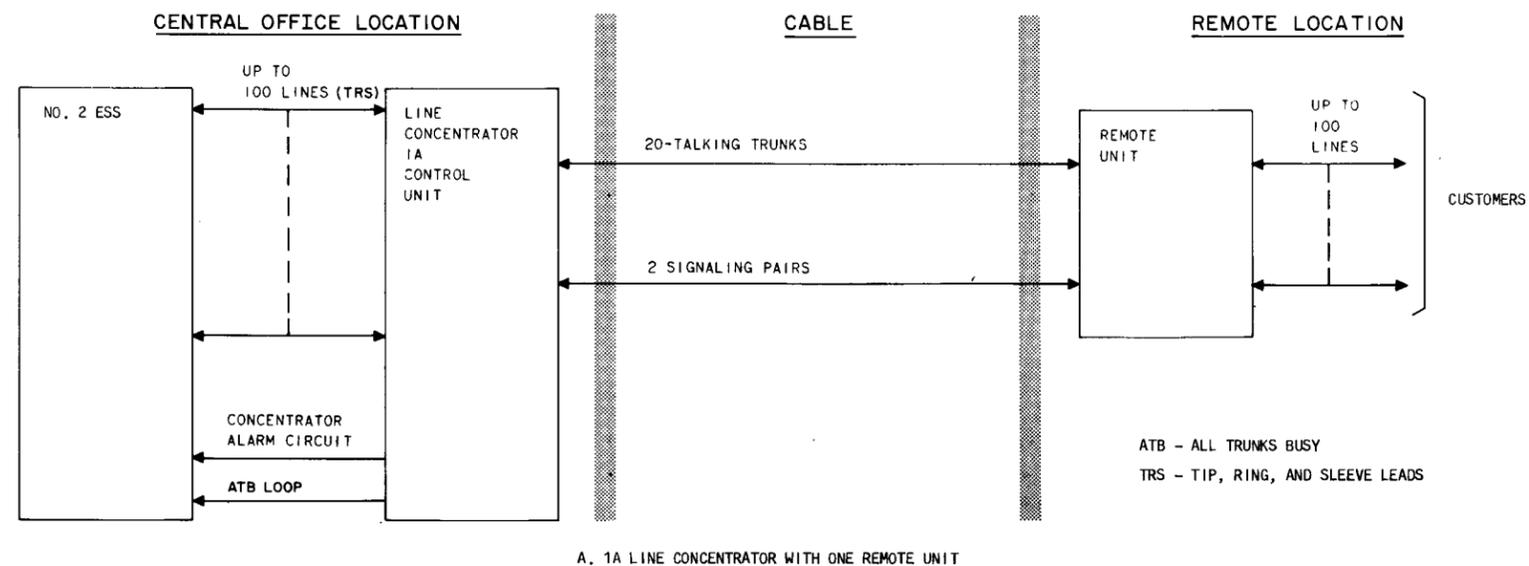


Fig. 4—1A Line Concentrator—No. 2 ESS Interface

2-party, multiparty, or loop start coin lines in any combination. **Ground start lines cannot be served by a 1A Line Concentrator.** Any services available in the office are allowed except those which require extra leads. Multiline hunt groups cannot be served.

2.21 When all trunks to a particular RU are busy, the 1A Line Concentrator provides an ATB indication to a scan point. The No. 2 ESS routes terminating traffic to regular overflow tone or to busy tone.

2.22 Alarm conditions in the 1A Line Concentrator are connected to the No. 2 ESS. High tone, audible ringing, and operating power (if desired) are supplied by the central office.

2.23 More detailed descriptions of the 1A Line Concentrator are provided in reference D(9) in Part 19.

3. SYSTEM PERSPECTIVE

FEATURE OPERATION

A. All Systems

3.01 The operations performed by the interface feature for a call terminating to the MJ/MK system, the SLM, the LSS, or the 1A Line Concentrator are depicted in Figure 5. The common operations are covered first, followed by paragraphs unique to each system. For originating calls, a mobile radio customer must be resting on a marked-idle channel at the instant of going off-hook. For the other systems, a channel or trunk must be available before dial tone can be returned to the calling line. The remainder of the originating call process is similar to that of a typical line origination.

3.02 When a terminating call is attempted, the digits are collected and translations are performed on the dialed digits. The 4-digit translation yields a general purpose expansion which contains the features of the called line.

3.03 Each expansion contains a call forwarding (CF) bit, a busy (BSY) bit, and the key scan point number (KEY SPN) for the ferrod assigned as the ACB or ATB indication for the interconnecting system.

3.04 If the line has the call forwarding feature active, a transfer is made to the forward-to directory number. After the line is checked for assignment of the call forwarding feature, the KEY SPN is used to initiate a directed scan of the ACB/ATB ferrod. If the ferrod is saturated, an overflow tone or a busy tone is returned depending on the value of the BSY bit. Since the caller might think that the called line is busy if a busy tone is returned, it is preferred that the overflow tone be returned.

3.05 If the ferrod is not saturated, the busy/idle status of the called line is determined. If the line is busy, the terminal equipment numbers (TENs) of the calling and called lines are compared as a check for a reverting call. If the TENs are equal, the call is routed according to the specified office option for handling reverting calls. If the TENs are not equal, the called line is checked for the call waiting and series completion features. If the called line subscribes to either of these features, the call is routed accordingly. Otherwise, the call is routed to a busy tone.

3.06 If the line is not busy, the translation data for the called line is checked for a sleeve lead identity. If the line has a sleeve lead, the peripheral decoder buffer point is operated. Preringing tests and the ringing connections are established using normal call processing procedures.

B. MJ/MK Mobile Radiotelephone Systems

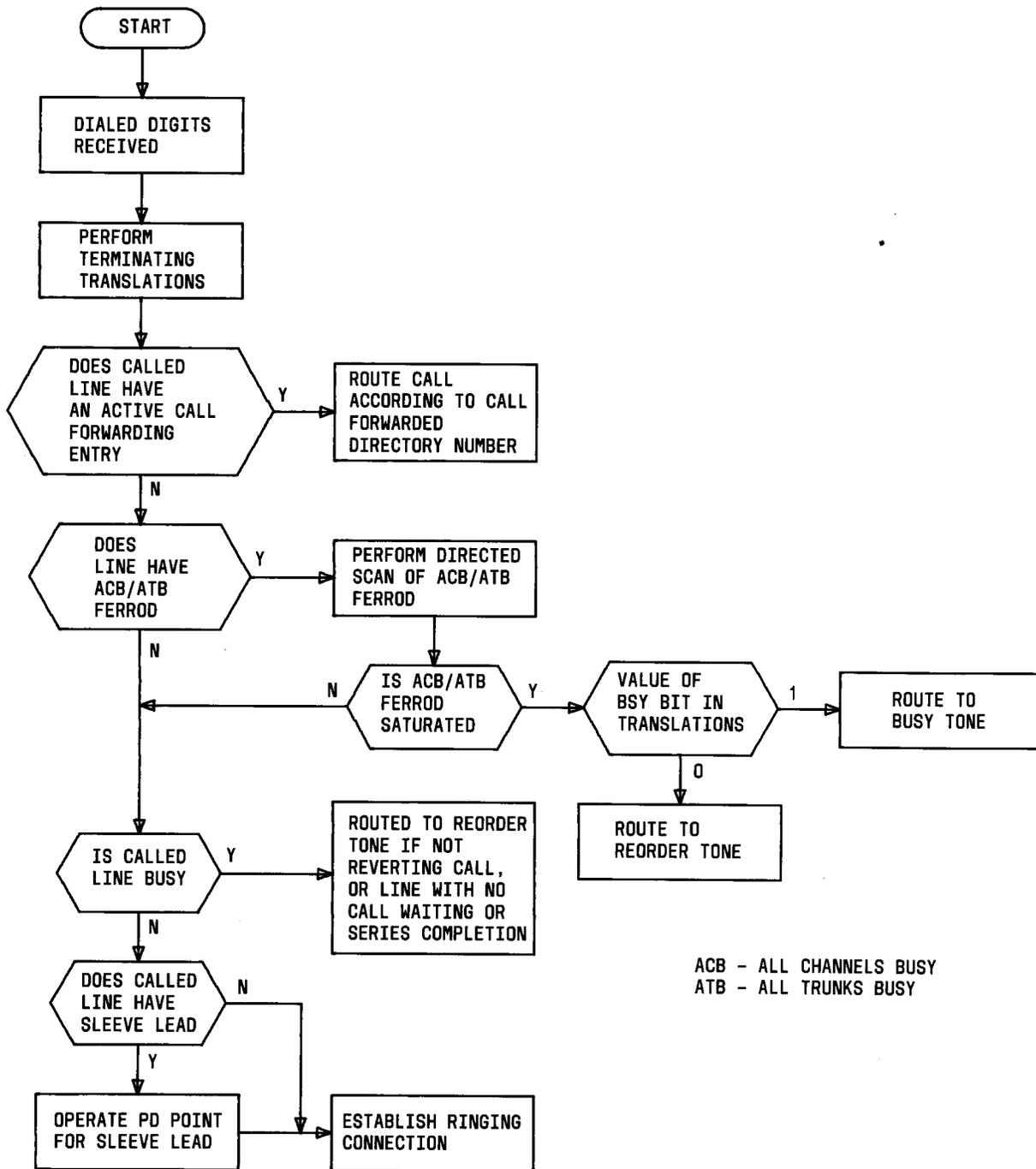
3.07 The MJ/MK system has an ACB ferrod that is saturated when there are no channels available to reach a customer. The overflow tone should be returned on a terminating call when a mobile customer cannot be accessed because of an ACB condition.

C. Subscriber Loop Multiplexer

3.08 The SLM has only one ACB ferrod regardless of the number of remote terminals; therefore, overflow tone is returned on terminating calls only when all 24 channels are busy.

D. Loop Switching System

3.09 The LSS has an ATB ferrod for each group of four lines with access to seven trunks. Overflow tone is returned for a terminating call



ACB - ALL CHANNELS BUSY
 ATB - ALL TRUNKS BUSY

Fig. 5—Feature Flow Diagram—Terminating Call

whenever an idle line cannot gain access to one of the seven trunks.

E. 1A Line Concentrator

3.10 The 1A Line Concentrator has an ATB ferrod for each remote unit. Overflow tone is returned for a terminating call whenever an idle line cannot be accessed because of an ATB indication.

SOFTWARE DATA STRUCTURES

3.11 Each line served from a No. 2 ESS via an MJ/MK system, an SLM, an LSS, or a 1A Line Concentrator usually requires both 4-word originating and 4-word terminating expansions from the general purpose expansion tables. Access to these expansions requires one word in the originating subtranslator and one word in the hundreds group table (Figure 6).

3.12 Each system provides contact closures to ferrods in the No. 2 ESS trunk scanner through remote master scanner applique circuits. Combinations of major, minor, service (refer to Part 17, GLOSSARY, for the definition of a service alarm), and maintenance alarms are provided by each system. Each row of alarms requires two words in the alarm monitor data tables (also shown in Figure 6).

3.13 When an alarm condition exists, an alarm is sounded and a message is printed on the maintenance TTY. The office records provide the identification of the affected system.

FEATURE ATTRIBUTES

4. APPLICABILITY

4.01 The interface feature is provided on a per-No. 2 ESS system basis for each MJ/MK system, Subscriber Loop Multiplexer, Loop Switching System, or 1A Line Concentrator.

5. LIMITATIONS AND RESTRICTIONS

5.01 Offices with the LO-1 or EF-1 generic programs are not fully compatible with the SLM, the LSS, and the 1A Line Concentrator. The incompatibilities exist in the following areas:

- (a) The LSS and 1A Line Concentrator require a time delay between the sleeve lead operation

and the network order which performs the power cross tests. The time delay allows the completion of the trunk to line connections in the remote unit. The power cross test is presently performed within 250 ms which may only test the portion of the subscriber loop from the network terminal to the LSS or 1A Line Concentrator control unit. Because the required delay of approximately 800 ms is not provided, operation of the LSS and 1A Line Concentrator with No. 2 ESS offices equipped with LO-1 and EF-1 generic programs *is not* recommended.

- (b) The automatic line insulation test (ALIT) program does not check for the presence of an ACB or ATB ferrod and does not operate sleeve lead circuits. It is not desirable for ALIT to operate the sleeve lead of an SLM line.

- (c) The trunk test panel (TPANEL) program also does not test ACB or ATB ferrods. TPANEL does not operate a sleeve lead circuit unless the line is a member of a multiline hunt group. Future generic programs will provide full compatibility with these systems.

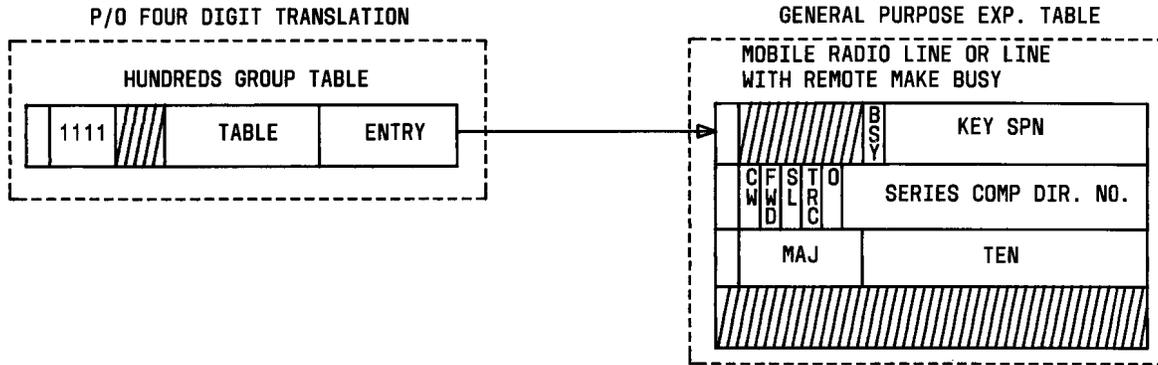
5.02 The equipment for each system within the central office must be kept outside of the No. 2 ESS ground window and must be placed at least four feet from the nearest No. 2 ESS frame or special contact protection must be provided for the MJ/MK system, SLM, LSS, and 1A Line Concentrator.

6. COMPATIBILITY AND INTERACTIONS

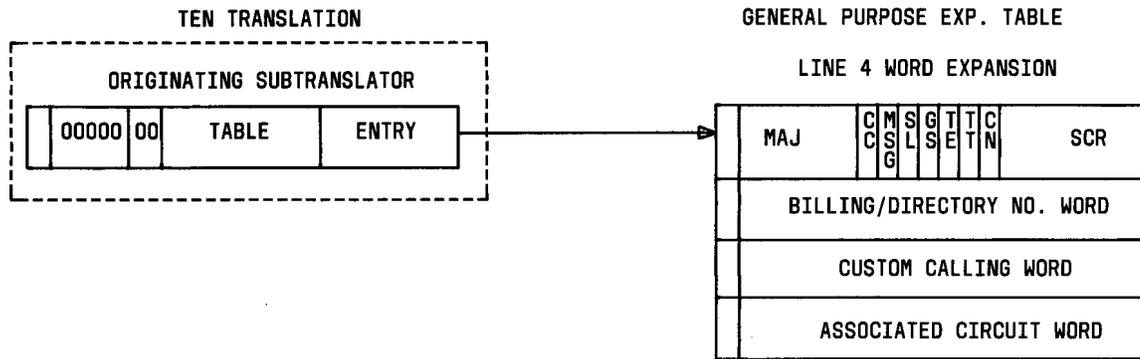
A. All Systems

6.01 Each system must be able to provide an ACB or ATB indication to the No. 2 ESS. Battery and ground for the ACB or ATB loop must be provided at each system to prevent a false ACB or ATB indication from occurring. Overflow tone (or optionally busy tone) should be returned to the calling customer when an ACB or ATB condition is detected.

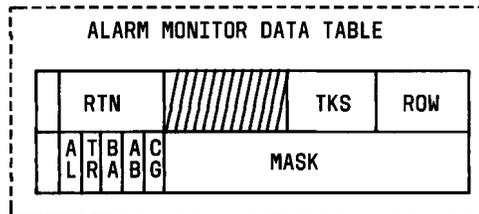
6.02 The No. 2 ESS must be able to supply each system with high tone, audible ringing, and, at the option of the operating company, the required power. Each system must activate the applicable alarms to the No. 2 ESS. The alarms provided from each system are listed in Part 2.



A. TERMINATING TRANSLATION



B. ORIGINATING TRANSLATION



C. TRANSLATION WORDS FOR ALARMS

Fig. 6—Translations for Interface Feature

B. MJ/MK Mobile Radiotelephone Systems

6.03 MJ/MK systems require customers to be on individual ground-start lines. Customers cannot subscribe to any services that require flashing of the switchhook.

6.04 Lines connecting to the MJ/MK system are ground-start lines with tip and ring leads only. For a mobile-to-land call, the calling signal

to the central office must be ground connected to the ring lead of the line circuit. The ground must be disconnected from the tip lead of the No. 2 ESS line circuit. For a land-to-mobile call, the central office ring-trip relay must be in series with the ringing circuit on the ring side of the line.

6.05 In order to interface with the No. 2 ESS, the MJ/MK system must conform to the issues (or later) and options of schematic drawings

listed in reference A(8) and A(9) in Part 19. In addition, large systems must conform to A(10) through A(13) and small systems to A(14) through A(17).

C. Subscriber Loop Multiplexer

6.06 The No. 2 ESS must provide a sleeve lead ground to each line connected to the SLM during all originating and terminating calls. Except for prepay coin lines, ground start lines cannot be used with the SLM.

6.07 Issues and options of schematic drawings required for the SLM-ESS interface are listed in reference B(17) of Part 19.

D. Loop Switching System

6.08 The No. 2 ESS must be able to provide a ground on the sleeve lead of each line connected to the LSS during all terminating and originating calls.

6.09 Issues and options of schematic drawings required for the LSS-ESS interface are not available at this time.

E. 1A Line Concentrator

6.10 Customer lines are not allowed to subscribe to any services which require extra leads for make busy scan points. The No. 2 ESS must be arranged to provide sleeve lead ground to the 1A Line Concentrator on all terminating and originating calls. Ground start lines cannot be used with the 1A Line Concentrator.

6.11 In order to interface with the No. 2 ESS, the 1A Line Concentrator must conform to the issue (or later) and options of the schematic drawing listed in reference D(13) in Part 19.

7. COST FACTORS

PROGRAM STORE

7.01 The following translation words are required for each line.

- (a) Originating—one word in the originating subtranslator of the TEN translator to address a line 4-word expansion in the general purpose expansion table.

- (b) Terminating—one word in the hundreds group table of the 4-digit translator to address a line 4-word expansion in the general purpose expansion table.

7.02 Each row of alarm ferrods requires two words in the alarm monitor data tables.

7.03 Each line class code requires three words in the line class code table.

HARDWARE

7.04 Each MJ/MK system requires three master scan points (one each) for the ACB indication and the major and minor alarms.

7.05 Each SLM requires four master scan points (one each) for the ACB indication and the major, minor, and service alarms. One peripheral decoder buffer point is required per line to provide a sleeve lead indication to the SLM.

7.06 Each LSS requires one master scan point per group of four lines for the ATB indication. Two master scan points per LSS are required for the major and minor alarms. Also, up to six master scan points can be provided for the major and minor maintenance alarms for the control terminal and the remote terminal(s). An option exists to connect the major and minor maintenance alarms for the control terminal and remote terminal(s) to an alarm remoting unit (PG-9) at the control terminal. Alarm status can then be acquired via telephone from a remote location. One peripheral decoder buffer point is required per line to provide a sleeve lead indication to the LSS.

7.07 Each 1A Line Concentrator requires two or three master scan points per system: one for the alarm and one scan point per remote terminal for the ATB indication. One peripheral decoder buffer point is required per line to provide a sleeve lead indication to the 1A Line Concentrator.

8. AVAILABILITY

8.01 The interface feature, with the limitations and restrictions described for the various systems (Part 5), is available with all issues of the LO-1 and EF-1 generic programs.

**CONSIDERATIONS FOR INCORPORATION
OF FEATURE INTO SYSTEM**

9. PLANNING

9.01 Special planning and coordination by operating company personnel is required prior to installing mobile radio and line concentrator systems. Strict compliance with Federal Communications Commission regulations for establishing a mobile radio system is necessary. Line concentrator systems require a detailed study of the limitations and restrictions applicable to each system, the proposed outside plant route, and an economic analysis of the total proposed plan.

9.02 Coordination is required with the departments responsible for the No. 2 ESS to completely review the required interface and the proposed location of any non-ESS equipment. The appropriate No. 2 ESS hardware (Part 10) must be provided and the completion of the input forms (Part 13) is required.

10. HARDWARE

10.01 For each master scan point, a Remote Master Scanner Applique Circuit (SD-1A210) is required. A circuit unit (trunk order code 74300) contains eight circuits and occupies a mounting plate in the miscellaneous trunk frame.

10.02 Each line of a line concentrator system requires a Remote Trunk Peripheral Decoder Applique Circuit (SD-2H130) if the control terminal is *not* collocated with the No. 2 ESS, or a Trunk Peripheral Decoder Applique Circuit (SD-2H117) if the control terminal is collocated with the No. 2 ESS.

10.03 A Remote Trunk Peripheral Decoder Applique Circuit Unit (trunk order code 72600) contains six circuits and occupies a mounting plate in the miscellaneous trunk frame.

10.04 A Trunk Peripheral Decoder Circuit Unit (trunk order code 71300) contains 24 circuits and is mounted in the miscellaneous trunk frame with one mounting plate.

11. DETERMINATION OF QUANTITIES

11.01 The total quantities depend upon the number of customer lines that are to be provided with each system.

11.02 For determination of quantities of circuits listed in Part 10, refer to 7.03 through 7.06.

11.03 For determination of the software quantities refer to 7.01 and 7.02 of Part 7, COST FACTORS.

12. ASSIGNMENTS AND RECORDS

Inputs and Record Keeping

A. Office Data Administration (ODA)

12.01 When an ODA run is required, the following completed forms must be submitted to the appropriate WECO Regional Data Center for processing:

- ESS 2100 Directory Number Table: This form lists the directory number and related features for use by the TEN and 4-digit translators.
- ESS 2107 Supplementary Information Table: This form lists supplementary information such as the sleeve lead function and the directed scan points. The scan point number for lines in a line concentrator must be input by recent change procedures.
- ESS 2306 Line Class Code Table: This form lists the originating major class, the terminating major class, and other information. The terminating major class for mobile radio and line concentrator systems is class code 28.
- ESS 2504 Scanner Field Table: This form establishes the ranges of the various types of scan field.
- ESS 2506 Alarm Monitor Data Table: This form assigns rows of alarm ferrods to a specific alarm type and indication.

12.02 The No. 2 ESS Translation Guide, TG-2H, contains the details for completing the ESS forms.

B. Recent Change Messages

12.03 The following RC messages are applicable to the interface feature:

- A RC:ALM—set or reset a mask bit for the miscellaneous ferrod section of the alarm monitor data table. This message is not active until a recent change update is made.
- A RC:L—used to insert, change, or delete originating and terminating translation data associated with a line.

12.04 The corresponding A VY messages can be used to verify the A RC messages.

C. Record Keeping

12.05 The following translation administration record forms reflecting the interface feature will be returned to the operating company after the ODA run is made:

- ESS 2100-R
- ESS 2306-R
- ESS 2504-R
- ESS 2506-R

12.06 A record of all recent change messages should be maintained in addition to the ESS-R forms.

13. NEW INSTALLATION AND GROWTH

13.01 Figure 7 illustrates the procedure for adding a new system to an existing No. 2 ESS office utilizing the Interface feature or for adding a line to an existing system.

14. TESTING

14.01 The A VY:L and A VY:ALM input messages can be used to verify the feature associated with a particular line and the assignment of the mask bits to a particular row of alarm ferrods, respectively.

14.02 Testing of overflow tone and alarms, respectively, for each system should be performed in accordance with the documents listed in the following references from Part 19.

- (1) Large MJ/MK systems—references A(4) and A(5).
- (2) Small MJ/MK systems—references A(6) and A(7).
- (3) SLM—references B(6) and B(9).
- (4) LSS—not presently available.
- (5) 1A Line Concentrator—reference D(7).

15. MEASUREMENTS

15.01 Peg and overflow counts for the ACB or ATB ferrods and for all the lines of the various systems are not provided by the No. 2 ESS. A 100-second usage measurement for up to 64 selected lines can be obtained using registers CLU01 through CLU64 of the weekly schedule. Refer to reference E(9) for additional information pertaining to measurements.

15.02 The SLM contains a traffic measurement module which records the maximum hundred-call-seconds usage and the total time during which all channels have been busy. The LSS contains a similar module which records the maximum hundred-call-seconds usage and the total number of blocked originating calls.

16. CHARGING

16.01 Standard charging practices apply to customers served via the No. 2 ESS through MJ/MK systems or one of the line concentrator systems.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01 The following list identifies terms used in this feature document:

- Ground Start—Origination of a call by grounding one side of the line at the station.

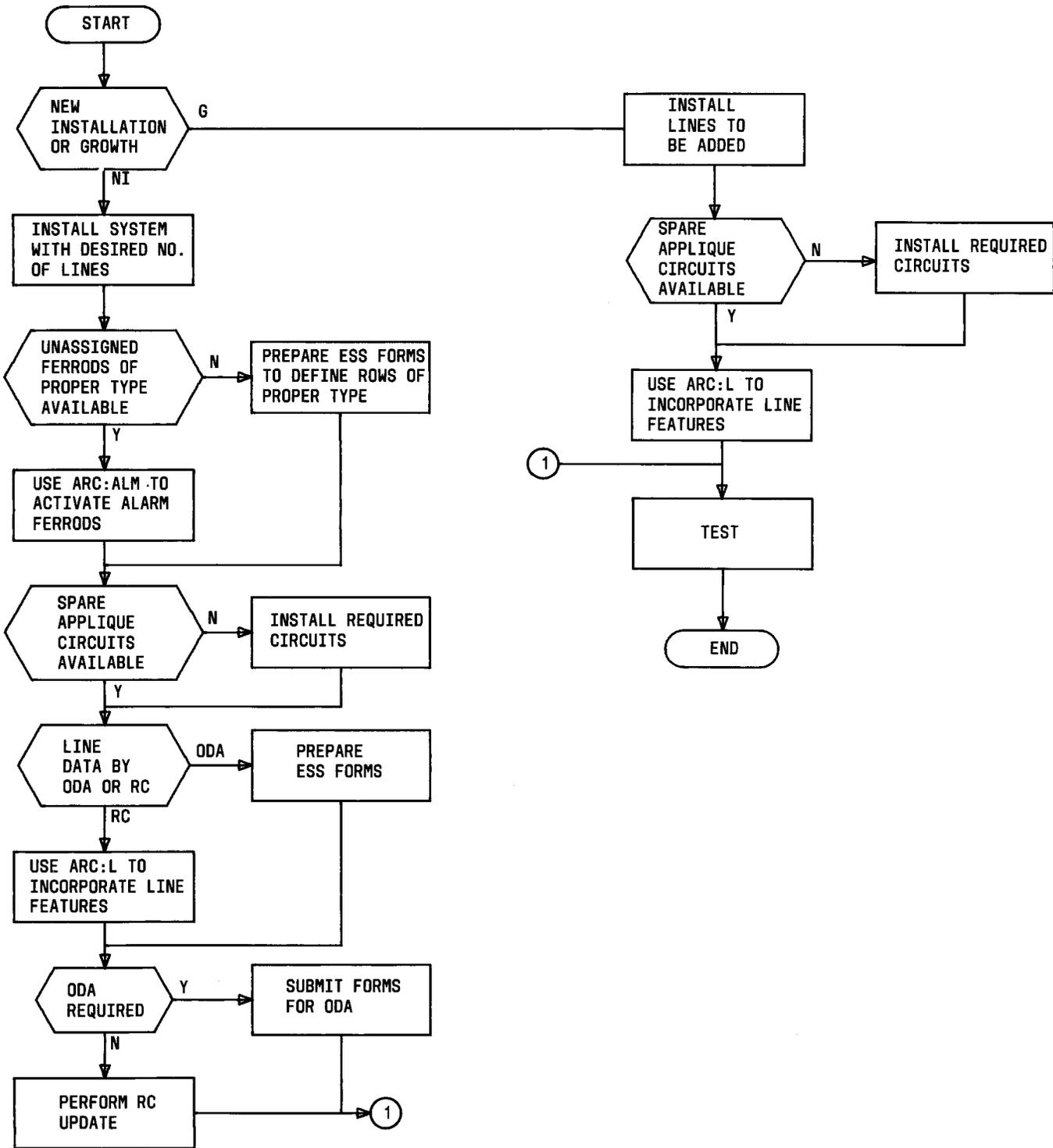


Fig. 7—Procedures for Providing the Interface Feature

- Loop Start—Origination of a call by closing the tip and ring loop through the customer telephone set.
- Master Scanner—A ferrod sensor matrix used to monitor various administrative and diagnostic points throughout the system.
- Office Data Administration (ODA) RUN—Mechanism by which translation information may be assembled or changed for a No. 2 ESS. Information from the ESS input forms is inputted into the regional ODA computer, assembled, then sent back to the No. 2 ESS.
- Recent Change (RC) Messages—Mechanism for making changes to information stored in the program store. These changes are accomplished via TTY input messages and are stored in the recent change area of call store until some later time when the program store can be updated.
- Service Alarm—An audible or visual alarm that is intended to alert central office personnel to an incoming call from customers, outside craftspersons, or other maintenance personnel usually for the purpose of reporting a condition that requires attention. In the specific application in the SLM No. 2 ESS interface, a request for assistance originates from an SLM Remote Terminal by plugging a hand test set into the order wire circuit. This action saturates the service alarm ferrod in the No. 2 ESS and sounds the alarm. When the person providing maintenance assistance plugs a headset into the SLM Control Terminal order wire circuit, the alarm releases and a talking path is established.
- Scan Point Number—The number used to locate the ferrod assigned to a line or trunk circuit to determine its present state.
- Sleeve Lead—The No. 2 ESS sleeve lead identifies a circuit path via line translation for control and supervision operations which require the use of a peripheral decoder point.

18. REASONS FOR REISSUE

- 18.01 This is the initial issue of this document.

19. REFERENCES

- 19.01 The following documents may be referred to for supplementary information concerning the interface feature or a specific interconnecting system.

A. MJ/MK MOBILE RADIOTELEPHONE SYSTEMS

- (1) Section 405-100-101—MJ Mobile Radiotelephone Overall System MJ System General Description
- (2) Section 405-100-102—MK Mobile Radiotelephone Overall System Description
- (3) Section 405-211-100—MJ Mobile Radiotelephone Large System Control Terminal Description
- (4) Section 405-211-509—MJ and MK Mobile Radiotelephone Large System Control Terminal Link Circuit and Link Allotter Circuit Tests
- (5) Section 405-211-514—MJ and MK Mobile Radiotelephone Base Stations Large System Control Terminal Base Station Identifier Control Circuit Tests
- (6) Section 405-212-100—MJ and MK Small System Control Terminals General Description
- (7) Section 405-212-501—MJ and MK Small System Control Terminals Link Circuit
- (8) SD-2R023-01, Issue 8, MJ and MK Mobile Radiotelephone System Key Sheet
- (9) SD-2R112-01, Issue 2D, MJ and MK Mobile Radiotelephone System ESS Tone and All Channels Busy Interface Circuit
- (10) SD-2R002-01, Issue 12D, MJ and MK Mobile Radiotelephone System Line Circuit For Use In Large Systems, Options F and J (for new equipment), Options K, and Z (for existing equipment)
- (11) SD-2R008-01, Issue 14D, MJ and MK Mobile Radiotelephone System Line Circuit For Use In Large Systems, Option X
- (12) SD-2R014-01, Issue 7D, MJ and MK Mobile Radiotelephone System Alarm Circuit For Use In Large Systems

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- (13) SD-2R017-01, Issue 10D, MJ and MK Mobile Radiotelephone System Stile Circuit, Option P (Large System)
- (14) SD-2R017-02, Issue 6D, MJ and MK Mobile Radiotelephone System Stile Circuit, Option X (Small System)
- (15) SD-2R049-01, Issue 7D, MJ and MK Mobile Radiotelephone System Line Circuit For Use In Small Systems, Options Q and S (for new equipment), Options Q, T, and U (for existing equipment)
- (16) SD-2R054-01, Issue 13D, MJ and MK Mobile Radiotelephone System Link Circuit For Use In Small Systems, Option S
- (17) SD-2R055-01, Issue 6D, MJ and MK Mobile Radiotelephone Test Panel Circuit For Use In Small Systems
- (18) SD-2R023-01, MJ and MK Mobile Radiotelephone System Current Drain Data

B. SUBSCRIBER LOOP MULTIPLEXER

- (1) Section 363-200-100—Subscriber Loop Multiplexer Overall System Description
- (2) Section 363-200-105—Subscriber Loop Multiplexer Control Terminal Description
- (3) Section 363-200-110—Subscriber Loop Multiplexer Remote Terminal Description
- (4) Section 363-200-115—Subscriber Loop Multiplexer Digital Line Description
- (5) Section 363-200-120—Subscriber Loop Multiplexer Order Line Circuit Description, Operation, Installation, and Maintenance
- (6) Section 363-200-205—Subscriber Loop Multiplexer Control Terminal Installation Test Procedures
- (7) Section 363-200-210—Subscriber Loop Multiplexer Remote Terminal Installation Procedures
- (8) Section 363-200-500—Subscriber Loop Multiplexer System Trouble Locating Procedures

- (9) Section 363-200-505—Subscriber Loop Multiplexer CT Tests and Trouble Locating Procedures (when published)
- (10) Section 363-200-510—Subscriber Loop Multiplexer RT Tests and Trouble Locating Procedures (when published)
- (11) Section 363-200-515—Subscriber Loop Multiplexer Digital Line Tests and Fault-Locating Procedures
- (12) Section 801-450-150—Subscriber Loop Multiplexer Common Systems
- (13) Section 902-217-100—Subscriber Loop Multiplexer General Description
- (14) Section 902-217-110—Subscriber Loop Multiplexer Planning
- (15) Section 902-217-120—Subscriber Loop Multiplexer Repeater Spacing
- (16) Section 902-217-130—Subscriber Loop Multiplexer Design and Implementation
- (17) SD-1C351-01-A1—Common Systems Subscriber Loop Multiplexer Control Terminal Circuit
- (18) SD-1C352-01-A1—Common Systems Subscriber Loop Multiplexer Remote Terminal Circuit

C. LOOP SWITCHING SYSTEM

- (1) Loop Switching System System Manual Issue A

D. 1A LINE CONCENTRATOR

- (1) Section 067-105-201—No. 1A Cutover Procedures and Addition and Deletion of Individual Lines
- (2) Section 067-105-202—No. 1A Installation and Removal of Control Unit
- (3) Section 067-105-301—No. 1A Procedure for Releasing Permanent Signals from Line Concentrator Trunks
- (4) Section 067-105-501—No. 1A Preinstallation Tests and Tests and Inspections at Time of Installation

- (5) Section 067-106-201—No. 1A With MF Signaling Cut-Over Procedures and Addition and Deletion of Individual Lines
- (6) Section 067-106-301—No. 1A With MF Signaling Trouble Analysis Operating Methods
- (7) Section 067-106-501—Line Concentrator No. 1A with MF Signaling Preinstallation Test Tests and Inspections at Time of Installation and Out-of-Service Test
- (8) Section 067-106-502—Line Concentrator No. 1A with MF Signaling System Tests
- (9) Section 801-025-173—Modifications of No. 1A Line Concentrator Systems Equipment Design Requirements Common Systems
- (10) Section 801-025-175—No. 1A Line Concentrator Control Frames and Units
- (11) Section 915-774-210—Line Concentrator No. 1A 50- and 100-Line Remote Units, General Description and Application
- (12) Section 951-835-100—Line Concentrator No. 1A 100- and 50-Line Capacity Remote Units General Descriptive Information.
- (13) SD-96536-01, Issue 18D, Line Concentrator 1A, Options YA and ZY

E. OTHER REFERENCES

- (1) Digit Interpretation Program PD-, PF-, and PR-2H204-01
- (2) Input Message Manual No. 2 ESS IM-2H200
- (3) Office Data Tables Layout Specification No. 2 ESS PA-2H200
- (4) Output Message Manual No. 2 ESS OM-2H200
- (5) Remote Master Scanner Applique Circuit CD-1A210, SD-1A210
- (6) Remote Trunk Peripheral Decoder Applique Circuit CD-2H130, SD-2H130
- (7) Scanner Assignment Rules SD-2H167-01
- (8) Traffic and Plant Measurement Program PD-, PF-, and PR-2H116-01
- (9) Traffic and Plant Measurements No. 2 and No. 2B Electronic Switching Systems Section 232-120-301
- (10) Translation Guide, TG-2H
- (11) Trunk and Service Circuit Engineering Specification J2H031A-1
- (12) Trunk Peripheral Decoder Applique Circuit CD-2H117, SD-2H117