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SYSTEM CENTURY® DIGITAL CENTRAL OFFICE

TRAFFIC-MEASURING FACILITIES ADMINISTRATION

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1. INTRODUCTION

1.01 This section provides information related to the traffic-measuring and recording facilities available in a SYSTEM CENTURY® Digital Central Office equipped with common control frame (CCF) and local line switch (LLS) frames. Included are descriptions of the traffic-measuring facilities and flow charts indicating measuring points.

1.02 This section is reissued to incorporate changes required by the addition of the remote line switch (RLS) and line group measurements and to replace no path available measurements, at the line switch and subgroup levels, with more definitive failure-to-match and channel overflow measurements. Significant changes and additions are indicated by bars in the margin.

2. RELATED INFORMATION

2.01 General.

A Sales and Instructional Literature Index of latest available publications can be obtained from your Stromberg-Carlson sales representative or from Publications Services, Stromberg-Carlson Corporation, 400 Rinehart Road, Lake Mary, Florida 32746.

2.02 Related Publication.

The following publication is recommended for use with this document:

23-002-97 System Operators Manual

3. GENERAL

3.01 The provision of adequate quantities of equipment to ensure telephone service at an acceptable grade of service, within reasonable economic limits, and the administration of this equipment are directly dependent on the availability of accurate traffic data. The ability to accumulate appropriate traffic data for traffic engineering, dial-office administration, and traffic separations studies, is a recognized requirement for an automatic dial telephone exchange. This is especially true of sophisticated, computer-controlled digital switching systems, such as the SYSTEM CENTURY Digital Central Office.

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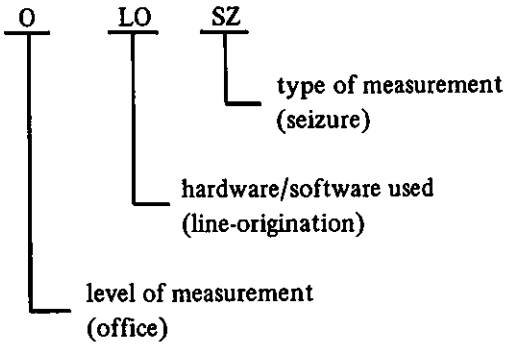
3.02 Call-processor software contains predefined points of measurements that, if activated by the operating company, record the traffic events as they occur in real time during actual call processing. This data is formed into messages and transferred to the maintenance processor for accumulation and reporting. Interim point of measurement procedures have been developed by BELL/USITA to allow traffic separation studies to be conducted on DCO® systems.

3.03 A series of basic and enhanced measurements are provided as follows:

a. The basic measurements are standard in all systems. These measurements include a comprehensive set of host office (LTF, LLS and line group), RLS and digital satellite unit (DSU) measurements, designed to satisfy Rural Electrification Administration (REA) requirements for traffic metering in digital central offices.

b. The enhanced central office, line subgroup, individual and enhanced satellite unit measurements are optional and provide additional types of measurements to meet more sophisticated requirements then are provided with the basic measurements.

3.04 Each measurement is assigned a mnemonic that is derived from a formalized coding system as shown in the following example:



All characters used in the coding system are listed and described in table 1 (mnemonic coding system, first character), table 2 (mnemonic coding system, second and third characters), and table 3 (mnemonic coding system, fourth and fifth characters).

NOTE. "Y" and "W" (frame level only) series measurements can be applied to line groups located in local and remote line switch frames.

3.05 Table 4 provides an alphabetical list and brief description of all measurements. The MNEMONIC column gives the mnemonic; the EQUIPPED column indicates if the measurement is provided with the basic measurements (B), or the enhanced measurements (E), and whether the measurements are for offices equipped with a digital satellite unit (S). Appendix 1 contains detailed descriptions of all measurements. Appendix 2 is a series of flow charts indicating where the various points of measurements are in relation to call progress.

3.06 Four general classifications of data are accumulated in the DCO system:

a. Peg-Count (PC).
This classification consists of event-count registrations of attempts made to seize a circuit or group of common circuits.

b. Overflow.
This classification consists of event-count registrations of attempts that cannot terminate to a circuit or common group of circuits because these circuits are busy. The design of the DCO system is such that the system makes several attempts to terminate when circuits are found busy. However, for overflow registration, only one registration is indicated, for the initial attempt whether effective or ineffective.

c. No Path Available (NPA).
This classification consists of event-count registrations of overflow attempts that cannot terminate to an idle circuit or group of circuits due to the unavailability of a path (cross-office highway timeslot) because of traffic congestion. The design of the DCO system is such that the system makes several retry attempts to terminate when paths are found busy. However, for NPA registration, only one registration is indicated, for the initial attempt whether effective or ineffective.

Table 1. Mnemonic Coding System, First Character

CHARACTER	*DESCRIPTION*
G	Group HUNT OR TRUNK
H	Line subgroup LLS
I	Individual circuit
O	Office
P	Port group
R	Digital satellite unit remote line group (DSURLG)
S	Digital satellite interface (DSI)
W	Line switch
X	Timeslot interchange
Y	Line group

Table 2. Mnemonic Coding System, Second and Third Characters

CHARACTER	*DESCRIPTION*	*CHARACTER*	*DESCRIPTION*
3W	Three-way calling	MS	Multifrequency sender
CB	Conference bridge	PM	Port termination
CF	Call forwarding	PO	Port origination
CM	Channel termination	PX	Private branch exchange
CO	Channel origination	RC	Routing code
CW	Call waiting	RV	Revertive
CX	Channel bidirectional	S1	Speed calling – one-digit
DD	Dial tone delay	S2	Speed calling – two-digit
DT	Dial tone	SL	Subscriber line transfer
EM	Equipment number termination	SM	Satellite number termination
EO	Equipment number origination	SO	Satellite number origination
FP	First choice port	TD	TONE-DIAL* receiver
LB	Line bidirectional	TI	Trunk, incoming
LK	Link	TL	Trunk-to-line
LL	Line-to-line	TO	Trunk, outgoing
LM	Line termination	TT	Trunk-to-trunk
LO	Line origination	WM	Line switch number termination
LT	Line-to-trunk	WO	Line switch number origination
MR	Multifrequency receiver		

*TONE-DIAL is a registered trademark of Comdial, Inc.

d. Usage.

This classification is a measurement of usage of a circuit or group of circuits. Usage is measured in hundred-call seconds (CCS).

1. For usage data values up to and including 99.99 CCS, the printout is in fractional CCS carried to two decimal places. This effectively provides measurement accuracy to the call second.

2. For usage data values in excess of 100 CCS, the printout is rounded off to the nearest whole CCS.

Table 3. Mnemonic Coding System, Fourth and Fifth Characters

CHARACTER	*DESCRIPTION*	*CHARACTER*	*DESCRIPTION*
3S	Three seconds	FM	Failure-to-match
AB	Abandoned before dialing	NP	No path available
AD	Abandoned before dial tone	OF	Overflow
AP	Abandoned partial dial	PG	Purged
AT	Attempt	RD	Requires dial tone
BY	Busy	RQ	Required
CR	Custom route treatment	SK	Stuck
DL	Dialed	SZ	Seizure
DS	Denied service	TB	Timeout – before dialing
EC	Effective call	TL	Timeout – to lockout
EN	Enabled	TP	Timeout – partial dial
EX	Executed	US	Usage

Table 4. List of Measurements

EQUIPPED	*MNEMONIC*	*DESCRIPTION*
B	GPXOF	Group PBX overflow
B	GPXSZ	Group PBX seizure
B	GPXUS	Group PBX usage
E	GRCDL	Group routing code dialed
B	GTIUS	Group trunk incoming usage
B	GTLAT	Group trunk-to-line attempt
B	GTOAT	Group trunk outgoing attempt
E	GTONP	Group trunk outgoing no-path-available
B	GTOOF	Group trunk outgoing overflow
B	GTOUS	Group trunk outgoing usage
B	GTTAT	Group trunk-to-trunk attempt
E	HLBFM	Line subgroup failure to match
E	HLBSZ	Line subgroup (LSG) line bidirectional seizures
E	HLBUS	LSG line bidirectional usage
E	IEMAT	Individual equipment number termination attempt
E	IEMUS	Individual equipment number termination usage
E	IEOSZ	Individual equipment number origination seizure
E	IEOUS	Individual equipment number origination usage
E-S	ISMAT	Individual satellite line termination attempt
E-S	ISMUS	Individual satellite line termination usage
E-S	ISOSZ	Individual satellite line origination seizure
E-S	ISOUS	Individual satellite line origination usage
E	IWMAT	Individual line switch number termination attempt
E	IWMUS	Individual line switch number termination usage
E	IWOSZ	Individual line switch number origination seizure
E	IWOUS	Individual line switch number origination usage
E	OCBOF	Office conference bridge overflow

Table 4. List of Measurements (Cont)

EQUIPPED	*MNEMONIC*	*DESCRIPTION*
E	OCBSZ	Office conference bridge seizure
E	OCBUS	Office conference bridge usage
E	OCFAT	Office call forwarding assignment attempt
E	OCFEX	Office call forwarding executed
E	OCWAT	Office call waiting attempt
B	ODD3S	Office dial tone delay over 3 seconds
B	ODTNP	Office dial tone no-path-available
B	OLLEC	Office line-to-line effective call
B	OLLNP	Office line-to-line no-path-available
B	OLMAT	Office line termination attempt
E	OLMBY	Office line termination busy
E	OLMDS	Office line termination denied service
E	OLOAB	Office line origination abandoned before dialing
E	OLOAD	Office line origination abandoned before dial tone
E	OLOAP	Office line origination abandoned partial dial
E	OLODS	Office line origination denied service
E	OLOPG	Office line origination purged
B	OLOSZ	Office line origination seizure
E	OLOTB	Office line origination timeout before dialing
E	OLOTL	Office line origination timeout to lockout
E	OLOTP	Office line origination timeout partial dial
B	OLTEC	Office line-to-trunk effective call
B	OLTNP	Office line-to-trunk no-path-available
E	OMRNP	Office multifrequency receiver no-path-available
B	OMROF	Office multifrequency receiver overflow
B	OMRRQ	Office multifrequency receiver required
B	OMRSZ	Office multifrequency receiver seizure
B	OMRUS	Office multifrequency receiver usage
E	OMSNP	Office multifrequency sender no-path-available
B	OMSOF	Office multifrequency sender overflow
B	OMSRQ	Office multifrequency sender required
E	OMSSK	Office multifrequency sender stuck release
B	OMSSZ	Office multifrequency sender seizure
B	OMSUS	Office multifrequency sender usage
B	ORVEC	Office revertive effective call
E	OSLEN	Office subscriber line transfer enabled
E	OSLEX	Office subscriber line transfer executed
E	OS1AT	Office single-digit speed call attempt
E	OS2AT	Office two-digit speed call attempt
E	OTDNP	Office TONE-DIAL receiver no-path-available
B	OTDOF	Office TONE-DIAL receiver overflow
B	OTDRQ	Office TONE-DIAL receiver required
B	OTDSZ	Office TONE-DIAL receiver seizure
B	OTDUS	Office TONE-DIAL receiver usage
E	OTLAB	Office trunk incoming abandoned before dialing
E	OTIAD	Office trunk incoming abandoned before dial tone
E	OTIAP	Office trunk incoming abandoned partial dial

Table 4. List of Measurements (Cont)

EQUIPPED	*MNEMONIC*	*DESCRIPTION*
E	OTICR	Office trunk incoming custom route treatment
E	OTIPG	Office trunk incoming purged
B	OTIRD	Office trunk incoming requiring dial tone
B	OTISZ	Office trunk incoming seizure
E	OTITB	Office trunk incoming timeout before dialing
E	OTITP	Office trunk incoming timeout partial dial
B	OTLEC	Office trunk-to-line effective call
B	OTLNP	Office trunk-to-line no-path-available
B	OTOAT	Office trunk outgoing attempt
E	OTOOF	Office trunk outgoing overflow
B	OTTEC	Office trunk-to-trunk effective call
B	OTTNP	Office trunk-to-trunk no path available
E	O3WAT	Office three-way call attempt
E	PPMUS	Port group termination usage
E	PPOUS	Port group origination usage
B-S	RCMAT	DSU remote line group (DSURLG) channel termination attempt
B-S	RCMOF	DSURLG channel termination overflow
B-S	RCMUS	DSURLG channel termination usage
B-S	RCOOF	DSURLG channel origination overflow
B-S	RCOSZ	DSURLG channel origination seizure
B-S	RCOUS	DSURLG channel origination usage
B-S	SCMAT	DSI channel termination attempt
B-S	SCMOF	DSI channel termination overflow
B-S	SCMUS	DSI channel termination usage
B-S	SCOOF	DSI channel origination overflow
B-S	SCOSZ	DSI channel origination seizure
B-S	SCOUS	DSI channel origination usage
B-S	SDD3S	DSI dial tone delay over 3 seconds
B	WCXOF	LS channel bidirectional overflow
B	WDD3S	LS dial tone delay over 3 seconds
B	WLBFM	LS line bidirectional failure to match
B	WLMAT	LS line termination attempt
B	WLMUS	LS line termination usage
B	WLOSZ	LS line origination seizure
B	WLOUS	LS line origination usage
B	WRVEC	LS revertive effective call
B	XLMUS	TSI line termination usage
B	XLOUS	TSI line origination usage
B	YCXOF	LG channel bidirectional overflow
B	YDD3S	LG dial tone delay over 3 seconds
B	YLBFM	LG line bidirectional failure to match
B	YLOSZ	LG line origination seizures
B	YLOUS	LG line origination usage
B	YLMAT	LG line termination attempts
B	YLMUS	LG line termination usage
B	YRVEC	LG revertive effective calls

3.07 Each register has a capacity of 16,777,215 events for PC, NPA, and overflow, and 167,772 CCS for usage. If the capacity of a register is reached, the register remains at the maximum value until a scheduled printout occurs.

3.08 A set of active and passive buffers contain the currently accumulating data, and the data last displayed, respectively. This allows all registers to start at zero for each scheduled reporting period, while the system maintains a copy of the last reported data. Table 5 shows the maximum number of registers equipped in each buffer depending on the option(s) provided with the system. Use the TMRS List Procedure in the *System Operators Manual*, referenced in paragraph 2.02, to determine the measurements and number of registers equipped in the system.

4. REPORT GROUPS

4.01 A traffic-measurement grouping file is provided to allow various reports (such as, office level reports, toll separation reports, maintenance reports) to be predefined. This grouping file is located on the floppy disk provided with the system.

4.02 Each of the 32 (maximum) reports in the grouping file contain the following user-specified information: (Figure 1 is an example of a traffic measurement report.)

a. The group of measurements to be included in the report.

b. The data collection and printout schedule for each report.

c. If specified, the position of each measurement in the report layout.

d. The identification of the terminal to which the report is directed.

4.03 The maximum number of measurements in any one group cannot exceed the number of registers provided (refer to table 5). The total number of measurements contained in the grouping file cannot exceed four times the number of registers provided. Any measurement may be a member of any or all groups. Only one group can be active at a time.

4.04 The capability exists to transfer a predefined grouping file from an existing floppy disk to a new disk containing an updated patch level of the same release.

Table 5. Number of Registers Provided

MEASUREMENTS PROVIDED	*OPTION(S) EQUIPPED*	
	BASIC	*DSU*
Basic	512	1024
Enhanced	1024	1024

5. ADMINISTRATION

5.01 Programing.

a. A traffic administration software program provides the means for the user, through the use of keyboard commands, to program traffic measuring (TM) reports. The program includes a temporary internal storage area, designated as the current group definition area, used to allow changes to be made to any group. Through a transfer command, 1 of 32 predefined groups are transferred from the disk to the current group definition area.

b. Included with each group is the data collection schedule, the terminal number to which the report is directed, and the assigned measurements. Once a group has been transferred to the current group definition area, administration of the parameters and/or activation can be done.

5.02 Keyboard Commands.

The following is a list and brief description of the keyboard commands. Refer to the section titled *System Operators Manual*, referenced in paragraph 2.02 for operating procedures to be followed when using these commands.

a. Load.

Transfers 1 of 32 group definitions from the floppy disk to the current group definition area.

NOTE. Unless otherwise stated, the following commands apply to the group in the current group definition area referred to as the current group.

```
                              ***TRAFFIC MEASUREMENTS REPORT***

 SITE:   LONGWOOD EDC          GROUP:0        BUFFER: ACTIVE
COLLECTION TIME:     00:34:21   REL TIME
REQUEST TIME:        13:30:25   02/06/81

 ROW    OLOSZ                                          ODD3S
  0     2727                                             0

  1                OLOAB      OLOAD      OLOAP        OLODS
                     67          0         47            0

  2                OLOTB      OLOTL      OLOTP
                     31          8          7

  3     OLLEC                OLLNP                    ODTNP
          760                    0                        0

  4     OLTEC                OLTNP
         1443                    0

  5     OTLEC                OTLNP                    ORVEC
         1112                    0                       38

  6     OTTEC                OTTNP
            0                    0

  7     OTISZ
         1362

  8     GTIUS/1   GTLAT/1                GTIUS/24     GTLAT/24
         1990       730                   1240          632

  9     OLMAT                OLMBY                    OLMDS
         1872                  398                        8

 10                OTOAT
                   1668

 11     GTOUS/4   GTOAT/4                GTONP/4      GTOOF/4
         1239       761                     0          184

 12     GTOUS/22  GTOAT/22               GTONP/22     GTOOF/22
          409       173                     0           11

 13     GTOUS/23  GTOAT/23               GTONP/23     GTOOF/23
          690       398                     0          103

 14     GTOUS/23  GTOAT/23               GTONP/23     GTOOF/23
          159        91                     0           12

TMREPT:  END OF TMRS REPORTING
```

Figure 1. Example of a Traffic Measurement Report

b. Add.

Adds a specified measurement and associated printout location to the current group.

c. Delete.

Deletes a specified measurement from the current group.

d. Define.

1. Defines the data collection and printout schedule for the current group.

2. Displays the mnemonic and description of all, or specific, measurements.

e. Change.

1. Changes the data collection and printout schedule of the current group.

2. Changes the terminal to which the current group is directed.

3. Changes the terminal to which the active (on-line) group is directed.

f. Activate.

Activates the current group and schedules data collection.

g. Terminate.

Terminates data collection.

h. List.

1. Displays the mnemonic of all active measurements.

2. Displays the number of assigned registers, and the total number equipped.

3. Displays all measurements in the current group.

4. Displays the data collection schedule and terminal number for the current group.

5. Displays the data collection schedule and terminal number for the active group.

i. Save.

Transfers the current group to the floppy disk.

j. Report.

1. Turns automatic report printout on or off.

2. On demand, displays the contents of all, or selected, active or passive, registers.

k. Purge. — NO!

Deletes all assigned measurements and/or data collection and printout schedules from the current group.

5.03 Report Generation.

Two types of report generations are provided, automatic and manual. The following is a brief description of each type:

a. Automatic.

Every quarter hour the software checks to see if the present time designates the end of the data accumulation period. If it does, the active and passive buffer contents are exchanged, and the active buffer is cleared for the next data collection period. The reporting software is then scheduled to automatically display the passive buffer contents at the designated terminal, provided the automatic display mode is "on". The display reports the data accumulated during the collection period just ended.

NOTE. If the terminal to which the report is directed is in use, a message indicating that a TM report is pending is displayed. If the terminal is not available before the end of the next reporting period, the data is lost.

b. Manual.

The software provides a command that allows the operator, at any time, to request an entire report or any selected register from either the active or passive buffers. The active and passive buffers contain data accumulated during the current and last data collection periods, respectively.

6. SCHEDULING

6.01 The data collection scheduling program allows the user, through the use of keyboard commands, to specify up to four nonoverlapping time segments for each report. Each segment consists of the following data:

a. The start day(s) of the week for which the segment applies.

b. The start time of the data collection period within the respective day(s). The time is specified as a 24-hour clock value, to the quarter clock hour.

c. The number of data collection periods starting at the start time specified on the respective day(s).

d. The size, in minutes, of each data collection period. The size is specified in 15-minute increments and cannot exceed 24 hours (1440 minutes). For each segment, the product of the number of periods and the period size cannot exceed 24 hours.

6.02 The following examples show the entries required to schedule data collection for typical busy hours, quarter-hour reports, and a 24-hour report. The examples are shown as they appear to the system operator.

NOTE. In figure 2, operator-entered data is below the headings. A one (1) below the day abbreviation (SMTWTFS for Sunday through Saturday) indicates active on that day, a zero (0) indicates not active.

a. Busy-Hour Collection.

In figure 2A, data collection is scheduled Monday through Friday during the time intervals 10 a.m. through 12 p.m. and 2 p.m. through 4 p.m. A report is automatically printed at 11 a.m., 12 p.m., 3 p.m., and 4 p.m., Monday through Friday.

b. Quarter-Hourly Collection.

In figure 2B, data collection is scheduled Monday through Friday during every quarter hour. A report is automatically printed every 15 minutes of each day.

c. One 24-Hour Collection Period.

In figure 2C, data collection is scheduled for one 24-hour period each day, Sunday through Saturday. A report is automatically printed at midnight of each day.

SEGMENT NUMBER	START DAY S M T W T F S	START TIME	NUMBER OF SAMPLES	SAMPLE SIZE (MIN.)
1	0 1 1 1 1 1 0	1000	2	60
2	0 1 1 1 1 1 0	1400	2	60

A. BUSY-HOUR COLLECTION

SEGMENT NUMBER	START DAY S M T W T F S	START TIME	NUMBER OF SAMPLES	SAMPLE SIZE (MIN.)
1	0 1 1 1 1 1 0	0000	96	15

B. QUARTER-HOUR COLLECTION

SEGMENT NUMBER	START DAY S M T W T F S	START TIME	NUMBER OF SAMPLES	SAMPLE SIZE (MIN.)
1	1 1 1 1 1 1 1	0000	1	1440

C. ONE 24-HOUR COLLECTION

CP 8583

Figure 2. Typical Busy-Hour, Quarter-Hour, and 24-Hour Report Entries

DETAILED MEASUREMENT DESCRIPTIONS

1. INTRODUCTION

1.01 This appendix contains detailed explanations of all measurements that can be made in the system. Tables 1, 2, and 3 describe basic system measurements, enhanced system measurements, and enhanced satellite unit measurements, respectively. Table 4 is a list of all usage points of meaurement (POM) referenced in tables 1, 2, and 3. Usage POM are used to indicate the point in call processing at which usage measurements start and stop. These POM apply to usage-related measurements rather than event-related measurements.

1.02 Some measurements require a qualifier to determine the specific item to be measured. If required, the qualifier is noted in the description of the measurement. Refer to table 5 for a description of all qualifiers.

1.03 Measurements exclude the following traffic:

a. Maintenance and/or routine test calls.

b. Circuits that are out of service.

c. Originating call attempts denied due to line-load-control restrictions.

d. Permanent signals after lockout occurs.

1.04 All measurements score a maximum of once per call. Some less obvious cases are:

a. Where the same point of measurement is "passed" more than once per call due to retrial loop processing. For example, if all TONE-DIAL receivers are busy, then OTDRQ (table 1) is not scored during the retrial loop.

b. Where a measurement can be scored from more than one point. For instance, OLOSZ (table 1) is scored only once per call whether the initial origination seizure is from a LTF line, line switch line, or DSU line.

Table 1. Basic System Measurements

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
		OFFICE TOTAL MEASUREMENTS			
ODD3S	Dial tone delay over 3 seconds	Off-hook requests for service that do not receive dial tone within 3 seconds. (Note 1)			
ODTNP	Dial tone no path available	Count made if the first try to connect dial tone fails due to path blockage in the DCO network. Not scored for successive retries.			
OLOSZ	Line origination seizures	An off-hook request for service. Counted when starting the attempt to connect dial tone. (Note 1)			
OLMAT	Line termination attempts	A call that terminates to a line. Call may have originated from line or trunk. Count made on ringing called line. (Note 1)			
OTISZ	Trunk incoming seizures	A call originating from a trunk. The call may ultimately be destined for a line or trunk. Count made on detecting trunk incoming seizure.			
OTOAT	Trunk outgoing attempts	A call that the system is attempting to terminate to a trunk. The call may have originated from a line or trunk. Count made after code translation.			
OLLEC	Line-to-line effective calls	Scored on ringing called line. Excludes revertive calls. (Note 1)			
OTLEC	Trunk-to-line effective calls	Scored on ringing called line. (Note 1)			
ORVEC	Revertive effective calls	Scored on ringing called line. Revertive calls only. (Note 1)			

Table 1. Basic System Measurements (Cont)

MNEMONIC	DESCRIPTION	EXPLANATION	QUALIFIER	USAGE POM START	USAGE POM STOP
OLTEC	Line-to-trunk effective calls	Scored effective on establishing connection to the outgoing trunk. (Notes 1, 2, 3)			
OTTEC	Trunk-to-trunk effective calls	See OLTEC.			
OLLNP	Line-to-line no-path-available	Count made on failure to connect to free called line due to path blockage in the DCO network. (Notes 1, 4)			
OLTNP	Line-to-trunk no-path-available	Count made if the attempt to connect to the first free trunk in the primary outgoing trunk group fails due to path blockage in the DCO network. Not scored for successive attempts. (Notes 1, 4)			
OTLNP	Trunk-to-line no-path-available	See OLLNP			
OTTNP	Trunk-to-trunk no-path-available	See OLTNP.			
OTIRD	Incoming trunk requiring dial tone	Incoming trunk class of service indicates the need to return dial tone. (Note 5).			
OTDRQ	TONE-DIAL receiver (TDR) required	Count of calls requiring a TONE-DIAL receiver.			
OTDSZ	TONE-DIAL receiver seizures	Scored on connecting a TONE-DIAL receiver.			
OTDUS	TONE-DIAL receiver usage	Total usage of all TONE-DIAL receivers.		3	8
OTDOF	TONE-DIAL receiver overflow	Scored if the first try to connect a TONE-DIAL receiver fails due to all TONE-DIAL receivers busy. Not scored for successive retries.			

Table 1 Basic System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
OMRRQ	Multifrequency receiver (MFR) required	Count of calls requiring an MFR.			
OMRSZ	Multifrequency receiver seizures	Scored on connecting an MFR.			
OMRUS	Multifrequency receiver usage	Total usage of all MFRs.		3	8
OMROF	Multifrequency receiver overflow	Scored if the first try to connect an MFR fails due to all MFRs busy. Not scored for successive retries.			
OMSRQ	Multifrequency sender (MFS) required	Count of calls requiring an MFS.			
OMSSZ	Multifrequency sender seizures	Scored on connecting an MFS.			
OMSUS	Multifrequency sender usage	Total usage of all MFSs.		3	8
OMSOF	Multifrequency sender overflow	Scored if the first try to connect an MFS fails due to all MFSs busy. Not scored for successive retries			
TIMESLOT INTERCHANGE (TSI) MEASUREMENTS (1 TSI serves 240 ports)					
XLOUS	TSI line origination usage	Total originating usage of all lines served by a TSI. The sum of all XLOUS registers provides total origination usage for all host and remote lines served by the office. (Note 6)	TSI	1	9
XLMUS	TSI line termination usage	Total terminating usage of all lines served by a TSI. The sum of all XLMUS registers provides total termination usage for all host and remote lines served by the office. Excludes revertive calls. (Note 6)	TSI	5	9

Table 1. Basic System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
		TRUNK GROUP MEASUREMENTS			
GTLAT	Group trunk-to-line attempts	Calls incoming via specified trunk group that require connection to a line. Count made after code translation. (Notes 1, 7)	GROUP		
GTTAT	Group trunk-to-trunk attempts	Calls incoming via specified trunk group that require connection to a trunk. Count made after code translation. (Note 7)	GROUP		
GTIUS	Trunk group incoming usage	Incoming usage of all members of specified trunk group. If 2-way group, measurement includes incoming usage only. (Note 7)	GROUP	2	9
GTOAT	Trunk group outgoing attempts	Scored if outgoing call is successfully connected to a free trunk in specified group. (Note 8)	GROUP		
GTOUS	Trunk group outgoing usage	Outgoing usage of all members of specified trunk group. If 2-way group, measurement includes outgoing usage only. (Note 8)	GROUP	4	9
GTOOF	Outgoing trunk group overflow	Scored if outgoing calls fails to find free trunk in specified group. (Note 8)	GROUP		
		LINE GROUP MEASUREMENTS			
GPXSZ	PBX group seizures	Count includes originating and terminating traffic from/to specified multiline hunt group. Scores on successfully seizing a member of group in either direction. (Note 9)	PBX		

Table 1. Basic System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
GPXUS	PBX group usage	Total usage of all members of specified multiline hunt group. Includes originating and terminating usage. (Note 9)	PBX	1, 5	9
GPXOF	PBX group overflow	Terminating overflow. Scored if terminating call fails due to all lines in specified multiline hunt group being busy. (Note 9)	PBX		
DIGITAL SATELLITE INTERFACE MEASUREMENTS (1 Digital Satellite Interface serves 240 satellite lines)					
SCOSZ	Digital Satellite Interface channel origination seizures	Scored when channel is assigned in response to an off-hook request for service from satellite line. Includes channel origination overflow count. (Note 10)	DSI		
SCOUS	Digital Satellite Interface channel origination usage	Channel usage for calls from satellite lines. (Note 10)	DSI	1	9
SCOOF	Digital Satellite Interface channel origination overflow	Off-hook request for service from satellite line is abandoned while request is in all-channels-busy queue awaiting channel assignment. Scored after channel assignment, when call processor recognizes on-hook condition of satellite line. (Note 10)	DSI		
SCMAT	Digital Satellite Interface channel termination attempts	Scored when channel is assigned for a call to satellite line. (Note 10)	DSI		
SCMUS	Digital Satellite Interface channel termination usage.	Channel usage for calls to satellite lines. (Note 10)	DSI	5	9

Table 1. Basic System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
SCMOF	Digital Satellite Interface channel termination overflow	Call attempts to satellite lines that fail due to all channels busy. (Note 10)	DSI		
SDD3S	Digital Satellite Interface dial tone delay over 3 seconds	Off-hook requests for service from satellite lines that do not receive dial tone within 3 seconds.	DSI		
DIGITAL SATELLITE UNIT REMOTE LINE GROUP (DSURLG) MEASUREMENTS (1 DSURLG serves 24 satellite lines)					
RCOSZ	DSURLG channel origination seizures	See SCOSZ.	DSUR		
RCOUS	DSURLG channel origination usage	See SCOUS.	DSUR	1	9
RCOOF	DSURLG channel origination overflow	See SCOOF.	DSUR		
RCMAT	DSURLG channel termination attempts	See SCMAT.	DSUR		
RCMUS	DSURLG channel termination usage	See SCMUS.	DSUR	5	9
RCMOF	DSURLG channel termination overflow	See SCMOF.	DSUR		
LINE SWITCH (LS) MEASUREMENTS (1 LS serves 1080 lines)					
WLOSZ	LS origination seizures	Count of off-hook requests for service from all lines served by the line switch.	FR		
WLOUS	LS origination usage	Total origination usage of calls from lines served by the line switch.	FR	1	9

Table 1. Basic System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
WLMAT	LS line termination attempts	Count of calls terminated to lines served by the line switch. Scored on ringing the called line. Does not include revertive calls.	FR		
WLMUS	LS line termination usage	Total termination usage of calls to lines served by the line switch. Does not include revertive calls.	FR	5	9
WRVEC	LS effective revertive calls	Count of revertive calls. Scored when the LGH switch path is disconnected and the line is placed in the revertive talk state.	FR		
WDD3S	LS dial tone delay over 3 seconds	Off-hook requests for service from LS lines that do not receive dial tone within 3 seconds.	FR		
	LINE GROUP (LG) MEASUREMENTS (Assignable to both local and remote line switch frames) (1 line group serves up to 90 lines)				
YLOSZ	LG line origination seizures	Count of off-hook requests for service from lines, served by the line group.	LG		
YLOUS	LG line origination usage	Total origination usage of lines, served by the line group.	LG	1	9
YLMAT	LG line termination attempts	Count of calls terminated to lines, served by the line group. Excludes revertive calls. Scored on ringing the called line.	LG		
YLMUS	LG line termination usage	Total termination usage of calls to lines served by the line group. Excludes revertive calls.	LG	5	9

Table 1. Basic System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
YRVEC	LG revertive effective calls	Count of revertive calls established by lines served by the line group. Scored when the line group highway switch path is disconnected and the line is placed in the revertive call state.	LG		
YDD3S	LG dial tone delay over 3 seconds	Off-hook requests for service from the line group that do not receive dial tone within 3 seconds.	LG		
YLBFM	LG line bidirectional failure to match	Combined count of terminating and final originating call attempts to/from the line group lines that fail due to the inability to match free and available channels in the LGH switch.	LG		
YCXOF	LG channel bidirectional	Applicable only to remote line groups (RLGs). Combined count of terminating and final originating call attempts to/from the remote line group that fail due to all channels busy in the T-span(s) interconnecting the remote line group to the LGH switch.	LG		

Table 1. Basic System Measurements (Cont)

NOTES.

1. *This measurement includes all host (LTF, LS) and RLS remote (satellite unit) lines served by the system.*
2. *Terminating usage associated with individual recorded announcement (RCAN) trunks is accumulated on a usage per call basis. For example, if three calls are connected (via the broadcast mode) to the same RCAN trunk, for the same 10-second period, the accumulated usage is 30 call seconds.*
3. *If terminating to RCAN trunk used for intercept or error announcement, the call is not effective.*
4. *This measurement includes that portion of the overall network that interconnects system ports. It excludes the LS line group highway switch network and satellite unit channels.*
5. *Measures direct-outward-dialing (DOD) traffic from CENTREX, improved mobile telephone system (IMTS), PBX, etc. subscribers that is incoming to the system via one-way or two-way trunks.*
6. *This measurement includes all host and/or remote lines served by the TSI.*
7. *Measures incoming traffic on any one-way or two-way trunk group.*
8. *Measures outgoing traffic on any one-way or two-way trunk group.*
9. *Measures total traffic on any bidirectional (for example, PBX) or directional (for example, in-WATS) multiline hunt group.*
10. *Measures traffic on non-dedicated channels only. Excludes traffic on dedicated channels.*
11. *The facilities that interconnect the LGH switch to the TSI, consist of port group highways for local line switches and T-spans for remote line switches.*

Table 2. Enhanced System Measurements

MNEMONIC	DESCRIPTION	EXPLANATION	QUALIFIER	USAGE POM START	USAGE POM STOP
		OFFICE TOTAL MEASUREMENTS			
OCBSZ	Conference bridge seizures	Scored on connecting 3-way calling conference bridge. (Note 1)			
OCBUS	Conference bridge usage	Usage of all 3-way calling conference bridges. (Note 1)		3	8
OCBOF	Conference bridge overflow	Scored if 3-way call attempt fails due to all 3-way calling conference bridges being busy. (Note 1)			
OS1AT	Single-digit speed call attempts	Number of single-digit speed calls. Scored on recognition of valid abbreviated dialing code.			
OS2AT	Two-digit speed call attempts	Number of 2-digit speed calls. Scored on recognition of valid abbreviated dialing code.			
03WAT	Three-way call attempts	Number of times that customers, with 3-way calling service, attempt to add on a third party.			
OCFAT	Call forwarding activation attempts	Number of times that customers, with variable call forwarding service, attempt to transfer their calls. Scored on receipt of the variable call forwarding activation code.			
OCFEX	Call forwarding executed	Number of calls forwarded (using the variable call forwarding feature).			
OCWAT	Call waiting attempts	Number of calls that customers, with call-waiting service, receive call-waiting tones.			

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
OSLEN	Subscriber line transfer enabled	Number of times that customers, with fixed call forwarding service, transfer their phones. Scored on receipt of the activate transfer code.			
OSLEX	Subscriber line transfer executed	Number of calls forwarded (using the fixed call forwarding feature).			
OLODS	Line origination denied service	Line class of service check indicates denial of originating service.			
OLOAD	Line origination abandoned before dial tone	Originating line disconnects before receiving dial tone.			
OLOAB	Line origination abandoned before dialing	Originating line disconnects after connection to digit receiver and no digits received.			
OLOTB	Line origination timeout before dialing	Originating line timed out after connection to digit receiver and no digits received.			
OLOAP	Line origination abandoned partial dial	Originating line disconnects with one or more digits dialed.			
OLOTP	Line origination timeout partial dial	Digit receiver has timed out with one or more digits received.			
OLOTL	Line origination timeout to lockout	Scored when system places line in lockout.			
OLMDS	Line termination denied service	Line class of service check indicates denial of terminating service.			

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	DESCRIPTION	EXPLANATION	QUALIFIER	USAGE POM	
				START	STOP
OLMBY	Line termination busy	The number of lines found busy on intra-office and incoming call attempts.			
OTIAD	Incoming trunk abandoned before dial tone	Incoming trunk releases before dial tone is returned.			
OTIAB	Incoming trunk abandoned before dialing	Incoming trunk releases after connection to digit receiver and no digits received.			
OTITB	Incoming trunk timeout before dialing	Incoming trunk has timed out after connection to a digit receiver and no digits received.			
OTIAP	Incoming trunk abandoned partial dial	Incoming trunk that releases with one or more digits dialed.			
OTITP	Incoming trunk timeout partial dial	Digit receiver timed out with one or more digits received from trunk.			
OTOOF	Outgoing trunk overflow	Scored if outgoing call fails to find a free trunk in trunk group used for primary route.			
OTDNP	TONE-DIAL receiver no path available	Scored if first try to connect a TONE-DIAL receiver fails due to path blockage in the DCO network. Not scored for successive retries. (Note 2)			

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
OMRNP	**Multifrequency receiver no path available**	Scored if first try to connect an MFR fails due to path blockage in the DCO network. Not scored for successive retries. (Note 2)			
OMSNP	**Multifrequency sender no path available**	Scored if the first try to connect an MFS fails due to path blockage in the DCO network. Not scored for successive retries. (Note 2)			
OMSSK	**Stuck multifrequency sender**	MFS timed out because the proceed-to-send signal was not received from distant office within specified time interval. (Note 2)			
		PORT GROUP MEASUREMENTS (1 port group serves 30 ports)			
PPOUS	**Port group originating usage**	Originating usage of all ports served by port group. Includes the following circuit types:	PG		
		DCO lines		1	9
		LS port group highway/timeslot (PGH/TS)		1	9
		DSU channels		1	9
		Incoming trunks		2	9
		Multifrequency senders		3	8
PPMUS	**Port group terminating usage**	Terminating usage of all ports served by port group. Includes the following circuit types:	PG		
		DCO lines		5	9
		LS port group highway/timeslot (PGH/TS)		5	9
		DSU channels		5	9
		Outgoing trunks (Note 3)		4	9
		TONE-DIAL receivers		3	8
		Multifrequency receivers		3	8
		Conference bridges		3	8

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	DESCRIPTION	EXPLANATION	QUALIFIER	USAGE POM START	USAGE POM STOP
GRCDL	Group routing code dialed	One or more 6-, 5-, 4-, 3-, 2-, or 1-digit codes may be assigned to 1 of 128 registers for preroute pegging. Code assignment is made via the Translation Table Update overlay. The 128 preroute register maximum depends on the code translation for the office.	PEG C		
GTONP	Outgoing trunk group no path available	Scored if last attempt to connect to a free trunk in specified outgoing trunk group fails due to path blockage in the network.	GROUP		
		INDIVIDUAL CIRCUIT MEASUREMENTS – PER PORT			
IEOSZ	Individual equipment number origination seizures	Number of times circuit assigned to the DCO port was seized originating or incoming. Originating/incoming circuit types include: DCO line, line switch PGH/TS, digital satellite interface channel, 1-way incoming trunks, MFS, etc.	EN		
IEMAT	Individual equipment number termination attempts	Number of times circuit assigned to the DCO port was seized terminating or outgoing. Terminating/outgoing circuit types include: line, line switch PGH/TS, DSI channel, 1-way outgoing trunk, 2-way trunk, TONE-DIAL receiver, MFR, conference bridge port, etc. bridge port, etc.			
IEOUS	Individual equipment number origination usage	Originating or incoming usage of circuit assigned to the DCO port. Originating/ incoming circuit types as for IEOSZ.	EN		

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
IEMUS	Individual equipment number termination usage	Terminating or outgoing usage of circuit assigned to the DCO port. Terminating/ outgoing circuit types as for IEMAT.	EN		
	INDIVIDUAL CIRCUIT MEASUREMENTS – PER LINE SWITCH LINE				
IWOSZ	Individual line switch number origination seizure	Off-hook request for service from LS line. Counted when starting attempt to connect dial tone.	EN		
IWMAT	Individual line switch number termination attempts	Count made on starting attempt to terminate to LS line. Does not include revertive call attempts.	EN		
IWOUS	Individual line switch number origination usage	Originating usage of LS line.	EN	1	9
IWMUS	Individual line switch number termination usage	Terminating usage of LS line. Does not include revertive call usage.	EN	5	9
	LINE SUB-GROUP (LSG) MEASUREMENTS (1 LSG contains 30 lines served by 1 line group highway)				
HLBSZ	LSG line bidirectional seizures	Combined count of origination off-hook requests for service plus call terminations to the line sub-group. Call terminations are scored on ringing the line. Revertive calls score on call origination only.	LSG		

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
HLBUS	LSG line bidirectional usage	Combined origination and termination usage of the LSG. Revertive calls score origination usage only.	LSG	(orig) 1 (term) 5	(orig) 9 (term) 9
LINE SUB-GROUP (LSG) MEASUREMENTS (1 LSG contains 30 lines served by 1 line group highway)					
HLBSZ	LSG line bidirectional seizures	Combined count of origination off-hook requests for service plus call terminations to the line sub-group. Call terminations are scored on ringing the line. Revertive calls score on call origination only.	LSG		
HLBUS	LSG line bidirectional usage	Combined origination and termination usage of the LSG. Revertive calls score origination usage only.	LSG	(orig) 1 (term) 5	(orig) 9 (term) 9
HLBFM	LSG line bidirectional failure to match	Combined count of terminating and final originating call attempts to/from the LSG that fail due to the inability to match free and available channels in the line group highway switch.			
OFFICE TOTAL – MISCELLANEOUS MEASUREMENTS					
OLOPG	Line origination purged	Count of the number of times line purge is initialized. This occurs when recognition of an invalid event during the processing of a line origination, results in the call being automatically purged from the system (i.e., free matrix path and restore line to idle state).			

Table 2. Enhanced System Measurements (Cont)

MNEMONIC	DESCRIPTION	EXPLANATION	QUALIFIER	USAGE POM START	USAGE POM STOP
OLOCR	Line origination custom route	Count of all line originations that terminate to non-measured custom route treatments such as speed-calling write-in. Excludes line origination custom route treatments that are measured, such as call-forwarding activation. (Note 4)			
OTIPG	Incoming trunk purged	Count of the number of times trunk purge is initialized. This occurs when recognition of an invalid event during the processing of an incoming trunk call, results in the call being automatically purged from the system (i.e., free matrix path and restore trunk to idle state).			
OTICR	Incoming trunk custom route	Count of all incoming trunk calls that terminate to custom route treatments such as, verification. (Notes 3 and 4)			

NOTES.

1. *Measures traffic on the conference bridge group assigned to the three-way calling feature only. Excludes traffic on conference bridge groups assigned to other features (for instance, operator verification).*

2. *This measurement includes that portion of the overall network that interconnects system ports. It excludes the LS line group highway switch network and satellite unit channels.*

3. *Terminating usage associated with individual recorded announcement (RCAN) trunks is accumulated on a usage per call basis. For example, if three calls are connected (via the broadcast mode) to the same RCAN trunk, for the same 10-second period, the accumulated usage is 30 call seconds.*

4. *Custom route treatments include the following:*

Verification	*LAMA*
Manual test panel	*CAMA loop around*
Alarm checking	*Call forwarding deactivate*
911 emergency	*Speed calling list change*
Test termination	

Table 3. Enhanced Satellite Unit Measurements

MNEMONIC	*DESCRIPTION*	*EXPLANATION*	*QUALIFIER*	*USAGE POM*	
				START	*STOP*
INDIVIDUAL CIRCUIT MEASUREMENTS – PER SATELLITE LINE					
ISOSZ	Individual satellite number origination seizures	Off-hook requests for service from satellite line. Count made when starting attempt to connect dial tone.	SN		
ISMAT	Individual satellite number termination attempts	Count made when starting attempt to terminate to satellite line. Call may have originated from line or trunk.	SN		
ISOUS	Individual satellite number origination usage	Originating usage of satellite line.	SN	1	9
ISMUS	Individual satellite number termination usage	Terminating usage of satellite line.	SN	5	9

Table 4. Usage Points of Measurement (POM)

POM	*DESCRIPTION*
1	Measurement starts when dial tone is sent to calling line.
2	Measurement starts when incoming trunk is seized.
3	Measurement starts when service circuit is marked busy.
4	Measurement starts when outgoing trunk is seized.
5	Measurement starts when ringing is applied to called line.
8	Measurement stops when service circuit is released.
9	Measurement stops when connection is released.

Table 5. Qualifiers

QUALIFIER	*DESCRIPTION*
DSI	Digital satellite interface (DSI), consisting of: Frame type = 2 DSI number = 00-30 For example, DSI-2 = 202
DSUR	Digital satellite unit (DSU) remote, consisting of: Frame type = 2 DSI number = 00-30 Line group = 0-9 For example, DSI-4, group-7 = 2047
EN	Individual equipment number, consisting of: For LS: Frame type = 3 Frame number = 00-99 Port group = 0-11 Port number = 00-89 For example, LLS-2, group-3, port-32 = 3020332 For LTF: Frame type = 0 Common control sector (CCS) = 0-3 Frame number within CCS = 0-7 Cell number = 0-7 Port number = 00-29 For example, LTF-07, cell-4, port-23 = 007423

Table 5. Qualifiers (Cont)

QUALIFIER	*DESCRIPTION*
FR	Local line switch frame, consisting of: Frame type = 3 Frame number = 00-99 For example, LLS-9 = 309
GROUP	Trunk group number, consisting of: Trunk group number = 1-511 For example, trunk group 36 = 36
LG	Line group, consisting of: Frame type = 3 Frame number = 00-99 Line group = 00-11 For example, LS-2, LSG-11 = 30211
LSG	Line subgroup, consisting of: Frame type = 3 Frame number = 00-99 Line subgroup = 00-35 For example, LS-2, LSG-11 = 30211
PBX	Line hunt group, consisting of: PBX group number = 512-1023 For example, PBX group-596 = 596
PEG C	Preroute peg count, consisting of: PCT value as assigned in Translator Table (TTU) CODE overlay.
PG	Port group, consisting of: Frame type = 0 CCS = 0-3 Frame number within CCS = 0-7 Cell number = 0-7 For example, LTF-23, cell-6 = 0236
SN	Individual satellite line, consisting of: Frame type = 2 DSI number = 00-30 Satellite number = 000-119 and 128-247 For example, DSI-1, port-99 = 201099
TSI	Timeslot interchange, consisting of: Frame type = 0 CCS = 0-3 Frame number = 0-7 For example, LTF-04 = 004

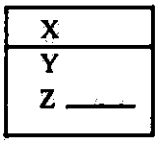
MEASUREMENT FLOW CHARTS

1. INTRODUCTION

1.01 This appendix contains flow charts that indicate the points of measurement in relation to the call progress flow and, when used with the information in Appendix 1, provides the means to accurately interpret the traffic data provided by the system. Figure 1 is an interconnection diagram showing the relationship between figures 2 through 10. Figure 11 shows the call progress flow and measurement points for calls encountering dial-tone delay greater than 3 seconds, and calls routed to a recorded announcement.

1.03 Table 1 is a description of the symbols used in the various flow charts.

Table 1. Flow Chart Symbol Definitions

SYMBOL	*DEFINITION*
	Normal call progress flow (no blockage, overflow, etc.)
	Abnormal call progress flow resulting from blockage, overflow, etc.
	Page exit connector. Letter indicates entry connector, number indicates figure number.
	Page entry connector.
	Decision point.
	Point of measurement. Where: X = definition Y = measurement level (office, port, group, etc.) Z = measurement mnemonic (with space provided to enter data if required)

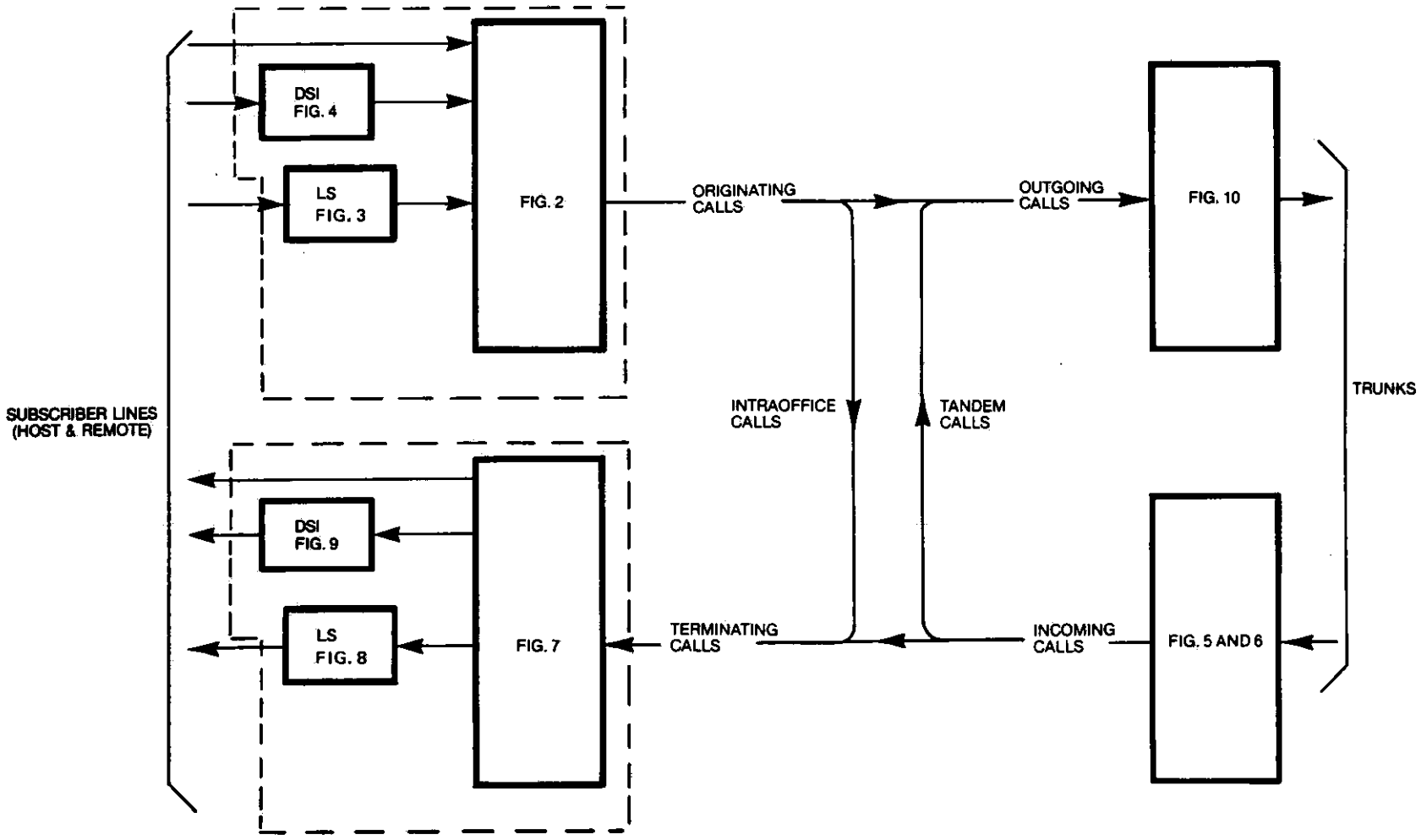


Figure 1. Interconnection Diagram for TMRS Flow Charts

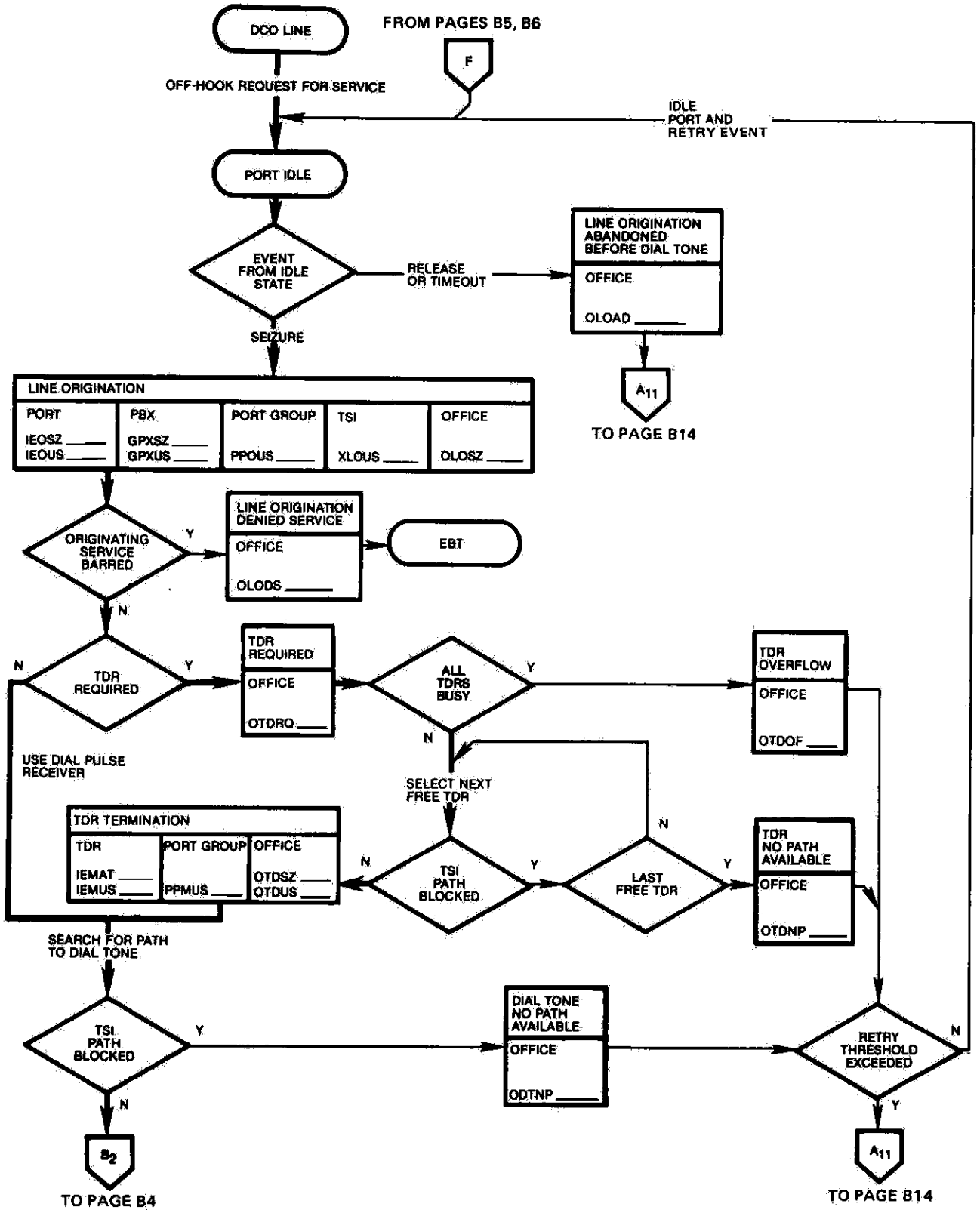


Figure 2. Originating (Sheet 1 of 2)

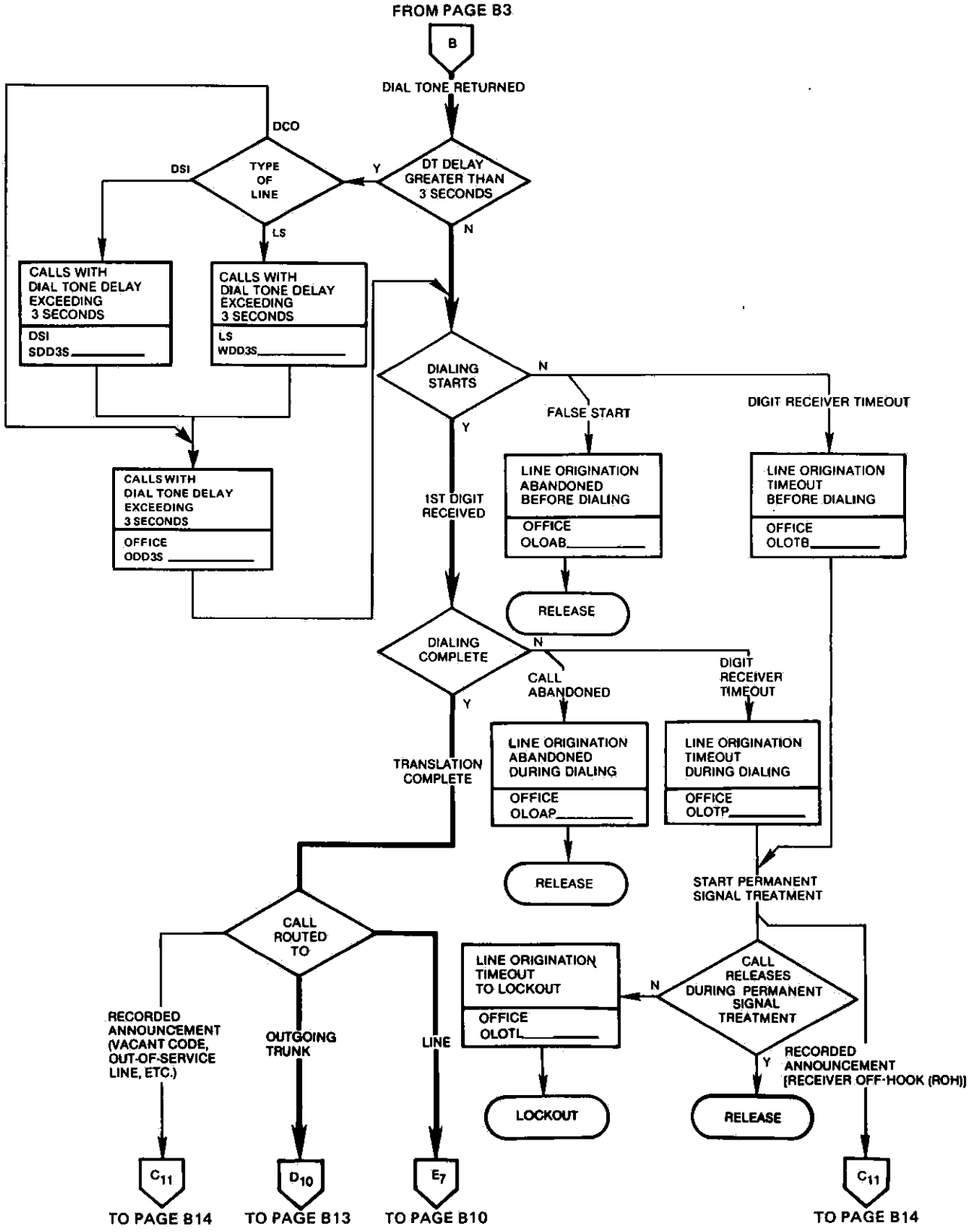


Figure 2. Originating (Sheet 2 of 2)

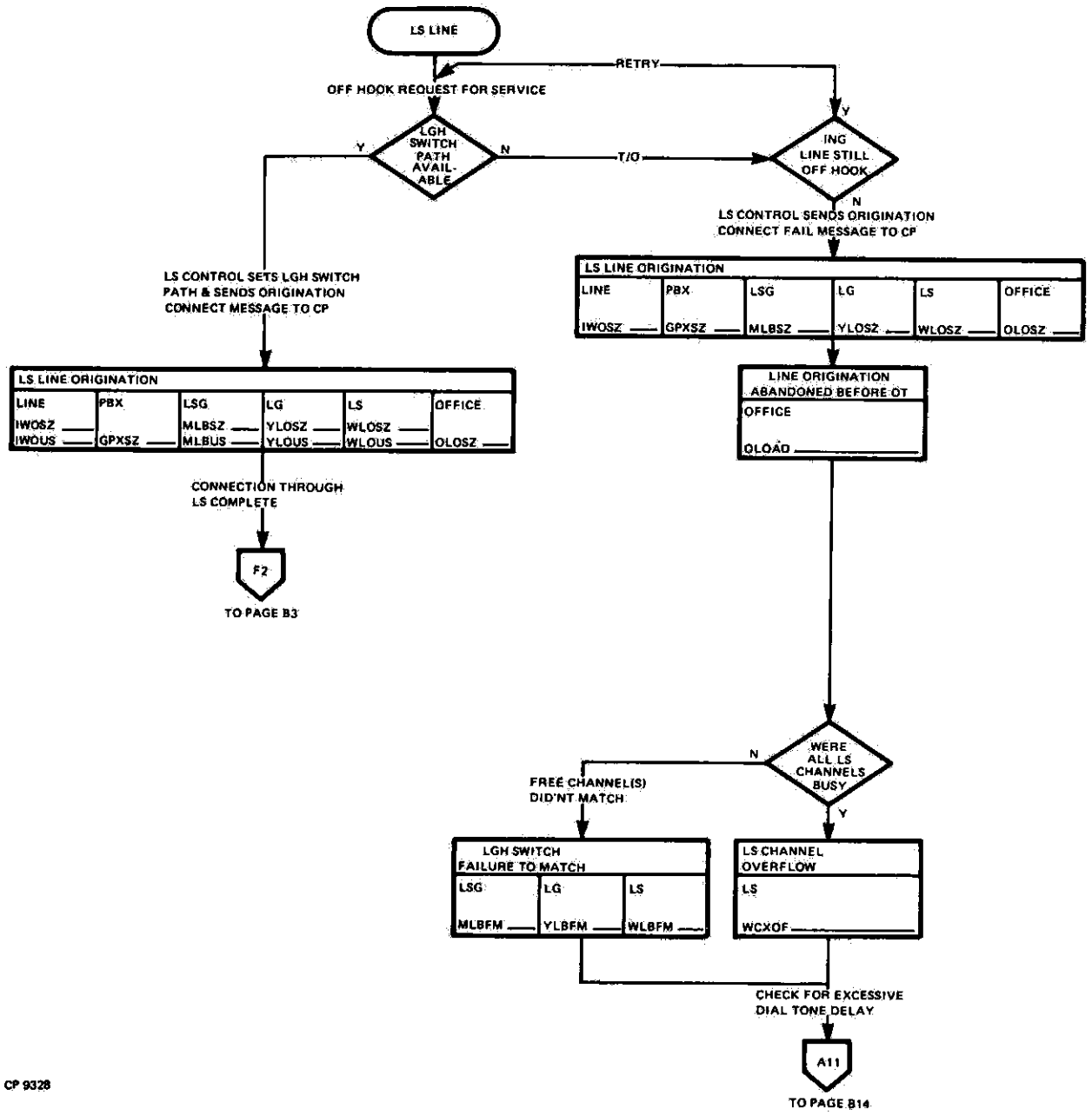


Figure 3. Line Switch Organization.

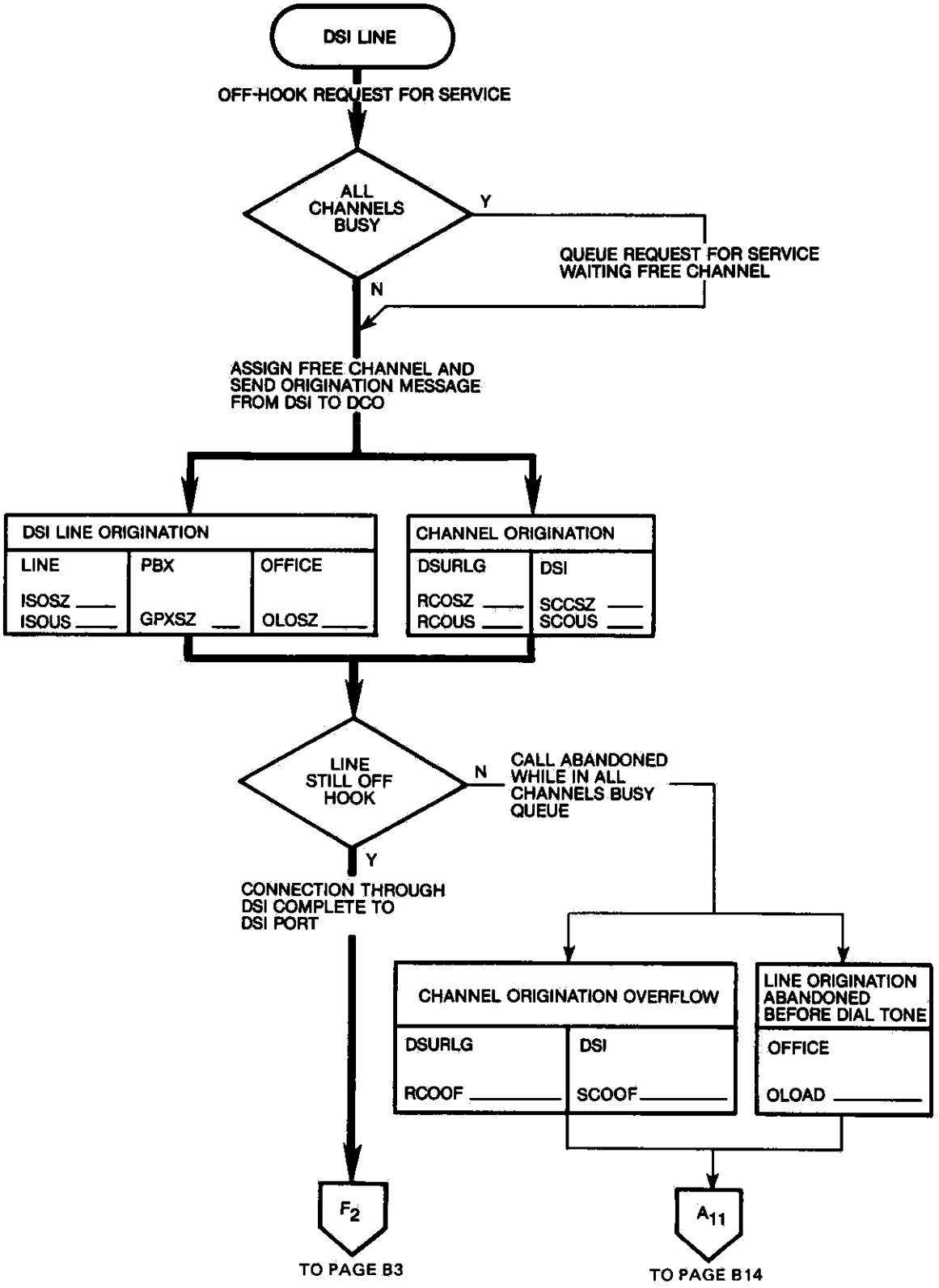


Figure 4. DSI Originating

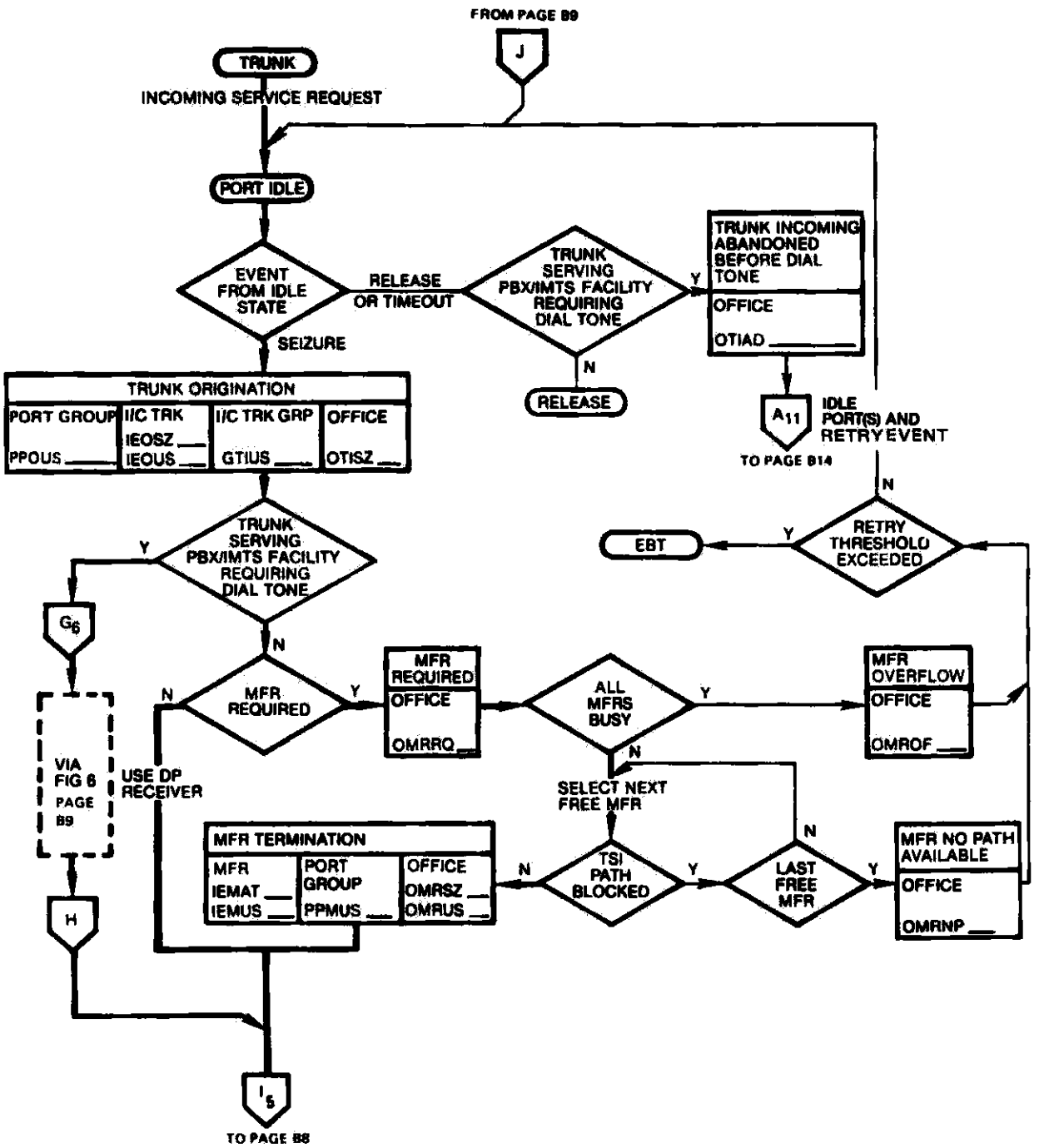


Figure 5. Incoming (Sheet 1 of 2)

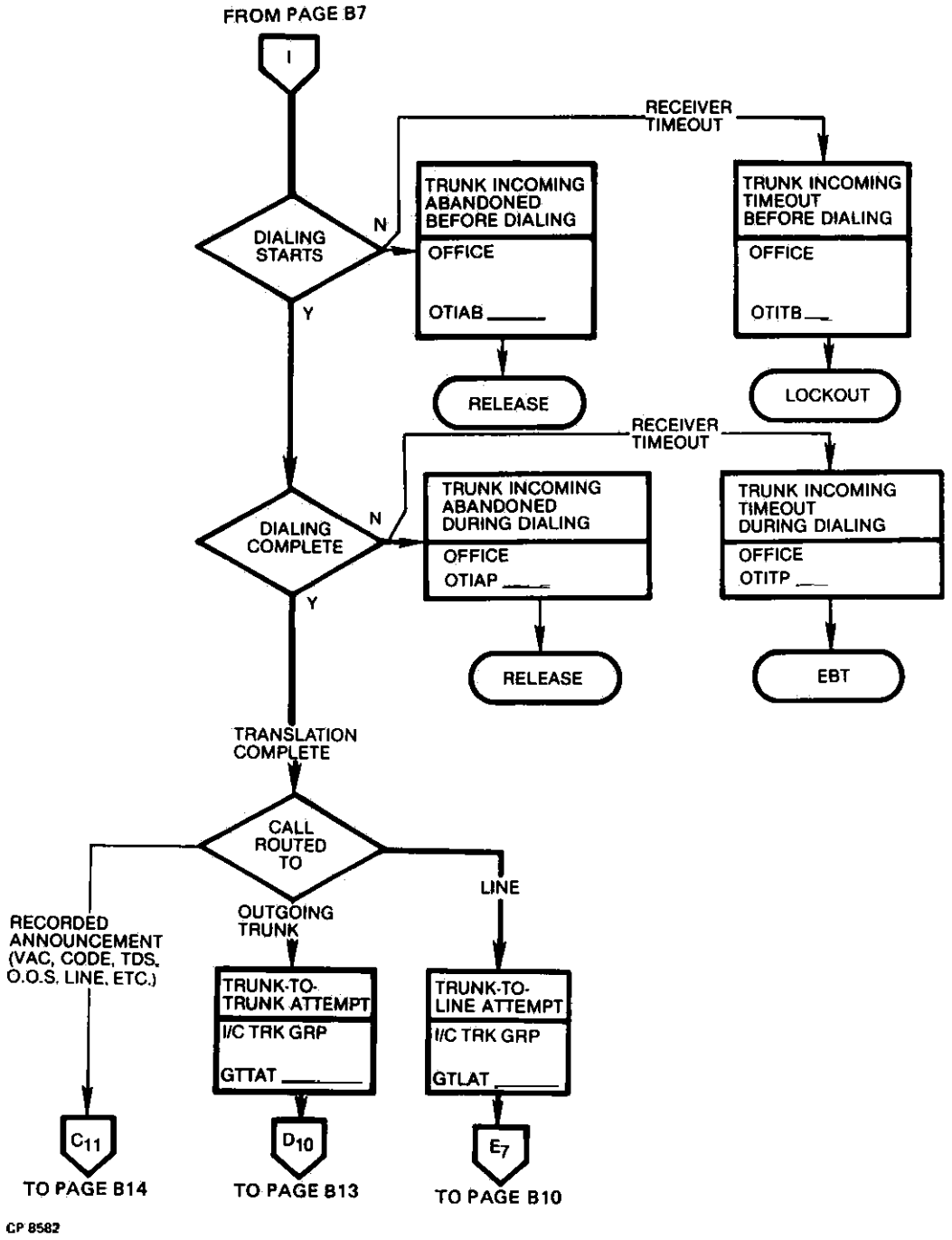


Figure 5. Incoming (Sheet 2 of 2)

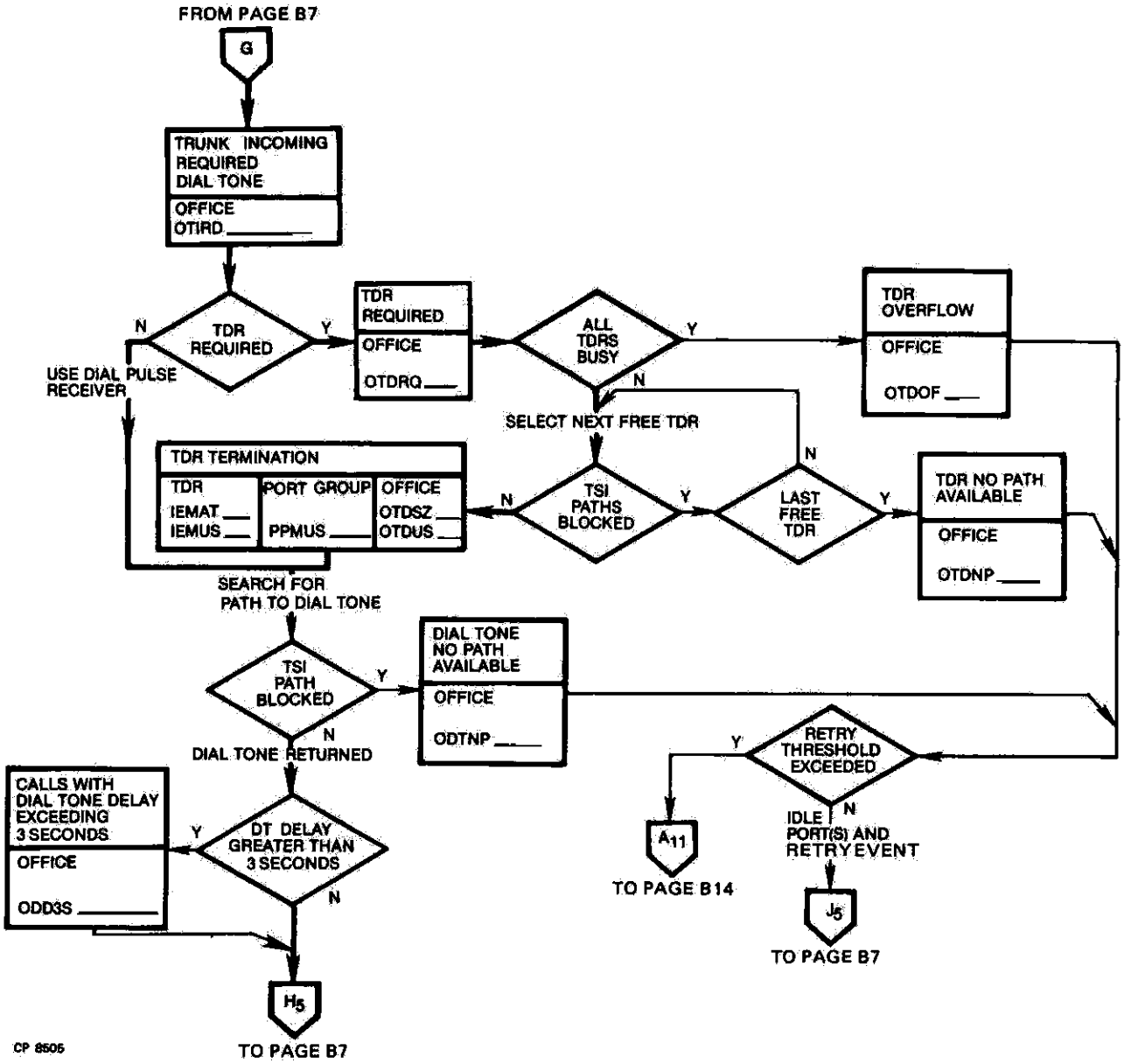


Figure 6. Incoming from PBX/IMTS Facility Requiring Dial Tone

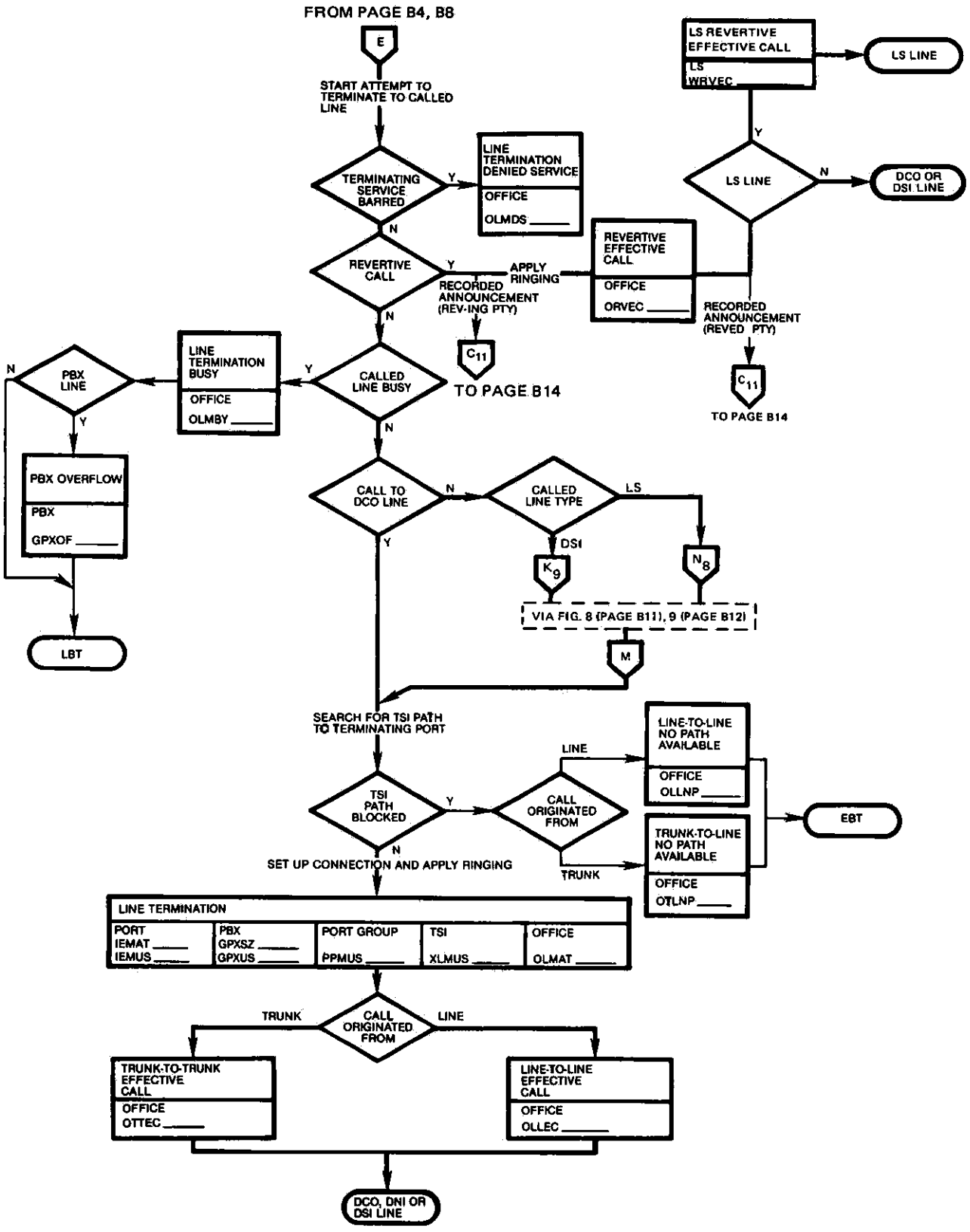


Figure 7. Terminating

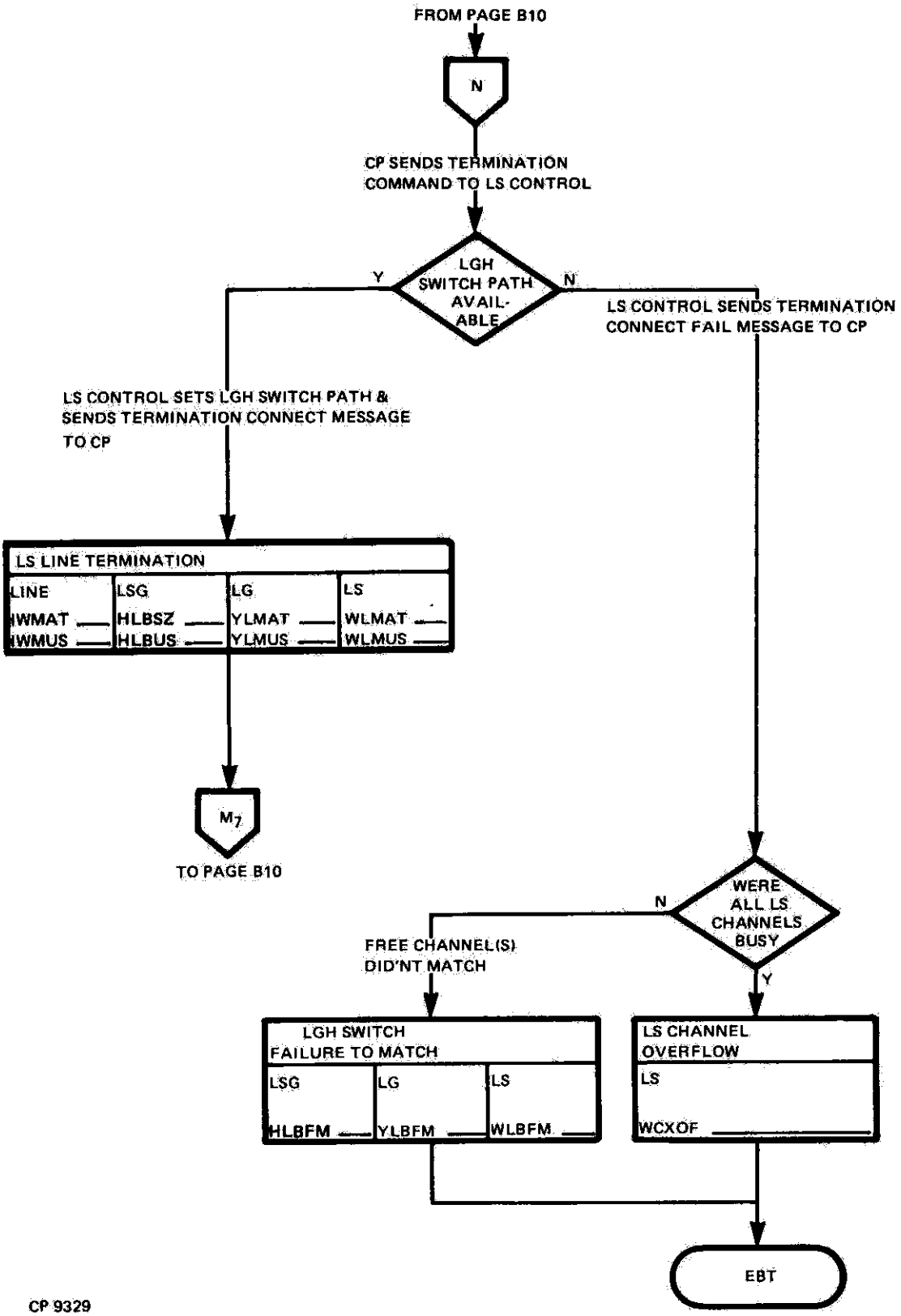


Figure 8. Line Switch Termination.

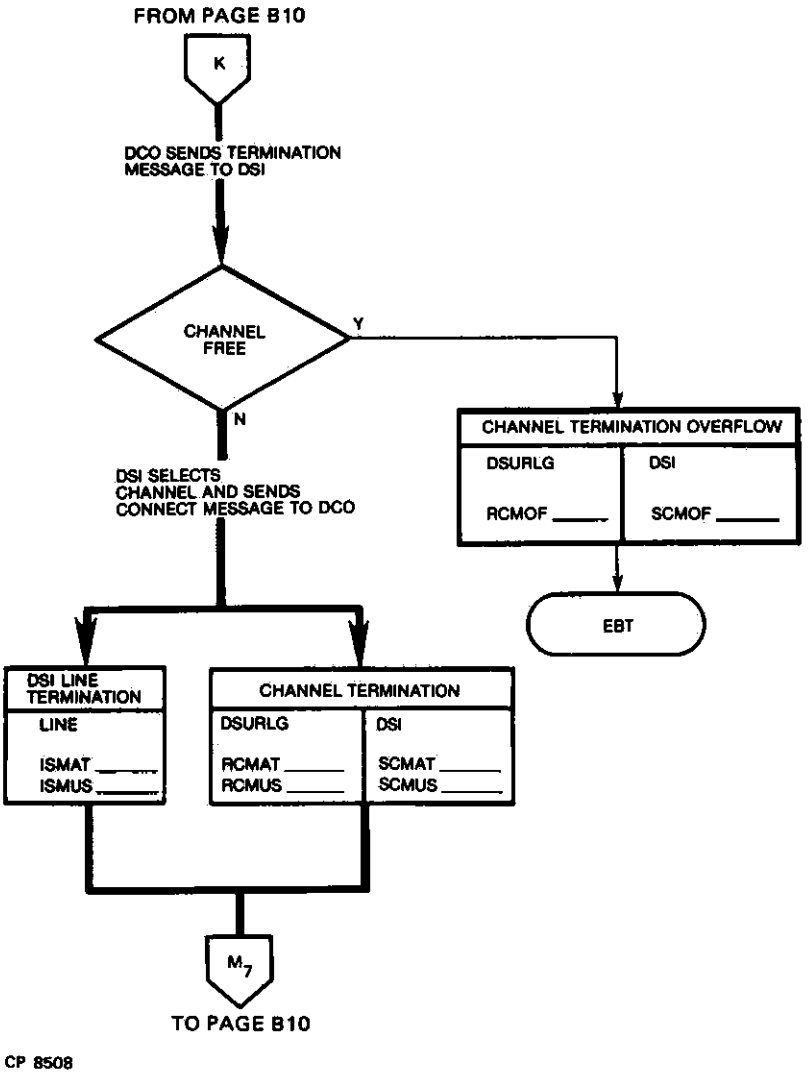


Figure 9. DSI Terminating

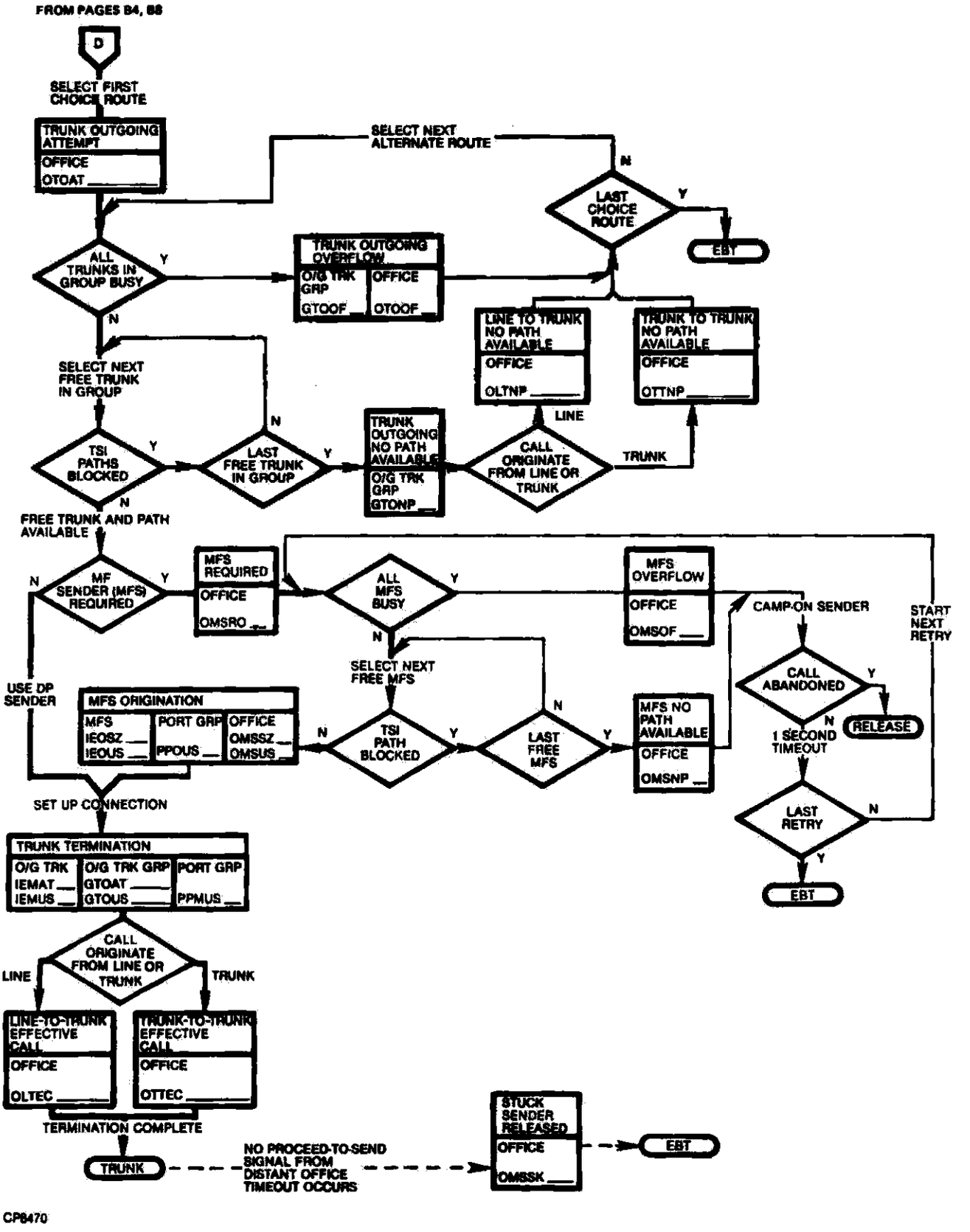
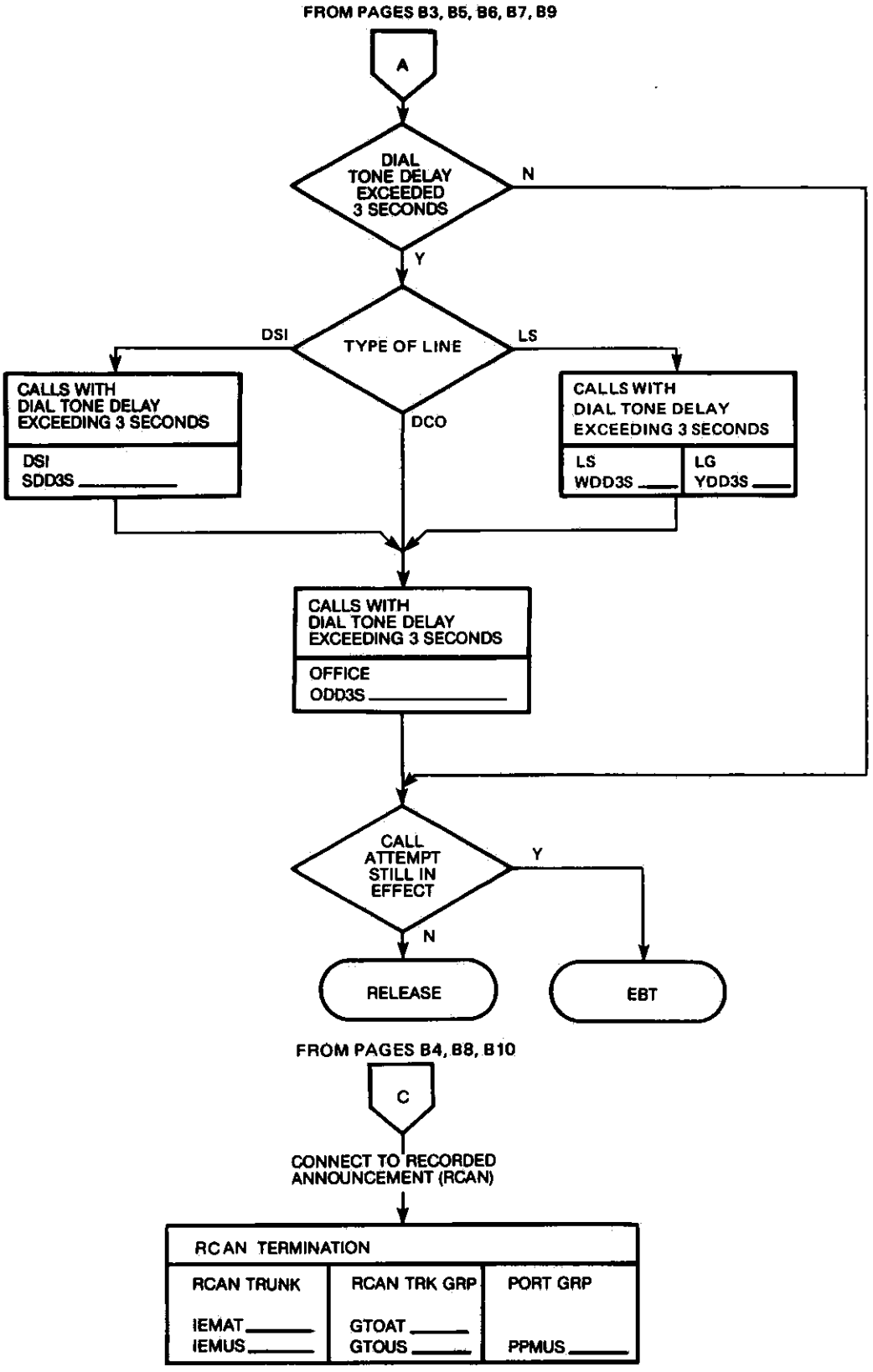


Figure 10. Outgoing



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