SWITCHING SYSTEMS MANAGEMENT

NO. 4A AND 4M CROSSBAR

TRAFFIC MEASUREMENTS

REGISTER OPERATION

TABLE OF CONTENTS

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TRAFFIC MEASUREMENTS

REGISTER OPERATION

1. GENERAL

1.01 This section covers the provision of mechanical registers for both card translator (CT) and electronic translator (ET) offices and software register assignments for the 4A/4M Switching System equipped with an Electronic Translator System (ETS). Fig. 1 specifies the quantity of registers associated with CT offices and Fig. 2 specifies the registers associated with ET offices. Fig. 3 shows the quantity of usage registers to be provided with the 4A/4M office.

1.02 With mechanical registers, it is often necessary to subgroup registers to avoid undercount when a high volume item can be scored simultaneously. For example, the FRA, NCA, and SOA peg count registers are furnished per subgroup of trunks since several markers can simultaneously establish a connection to these groups.

1.03 Unless otherwise indicated, the registers are not incremented on test calls.

1.04 References in this section to methods, planning, data requirements, service levels, and equipment quantities are based on American Telephone and Telegraph Company recommendations.

2. MECHANICAL REGISTERS

A. Final Reorder Announcement (FRA)—Common to CT and ET Offices

2.01 Peg count and overflow registrations should be provided for this group. The peg count register is incremented by the marker on calls with follow-with-reorder (FRO) routing instructions when an all-trunks-busy condition is present on toll completing trunk groups or ROA, VCA, MCA, UCA, SOA, and NCA with either card translator (CT) or Electronic Translator Systems (ETS).

Overflows from EA1 or EA2 subgroups are also routed to FRA trunks. The ETS will not record any calls routed to FRA trunks.

2.02 By subtracting the total of the overflow from these types of announcement trunks from this FRA peg count, a measure of the attempts which have failed because of toll completing trunks busy is obtained. During periods of heavy overload, this calculation is distorted by FST-ATB calls which have failed to find an available trunk on the second trial attempt and are routed by the marker to the FRA trunk group in the CT offices or to the NCA trunk group in the ETS offices.

2.03 When all FRA trunks are found busy, the overflow register will be incremented and the call is left "high and dry."

B. No Circuit Announcement (NCA)—CT Office

2.04 Peg count and overflow registrations should be provided for this group. The peg count register will be incremented by the marker when it receives a master-busy signal from the decoder or when it receives follow-with-master-busy (FMB) routing instructions from the decoder and all regular trunks are found busy. Also, when all CBA trunks are busy, the marker will route these overflow calls to this trunk group. When all NCA trunks are found busy, the marker will increment the overflow register and route the call to FRA.

C. No Circuit Announcement (NCA)—ET Office

2.05 Peg count and overflow registrations should be provided for this trunk group. The peg count register will be incremented by the marker when the ETS has been unable to route the call directly to NCA under the following conditions with ETS operation: (1) overflow from final routes with routing instructions of FMB or FOF and (2) marker

FST-ATB as in 2.02 and 2.31. The total NCA peg count for a particular period is the sum of the teletype-printed NCA peg count (3.13) and the 14-type NCA peg count registers. Overflow of NCA subgroups on calls routed there by preceding (1), will score a 14-type NCA overflow register. The total NCA overflow is the sum of the teletype-printed NCA overflow (3.13) and the 14-type NCA overflow registers. When all NCA trunks are found busy, the marker will increment both the peg count and overflow registers and route the call to FRA.

D. Reorder Announcement (ROA)—CT Office

2.06 Peg count and overflow registrations should be provided for this group. This register will be incremented by the marker when it receives a reorder signal from the decoder. These calls include permanent signals, partial digits, normal timing sender time-outs, sender failures, decoder and marker second trial failures, and CAMA position time-outs. These calls will be routed to reorder if (1) the CAMA operator, on second trial, fails to operate the register reset key when keying the calling number, or (2) if the CAMA operator keys in an extra digit the second time or (3) anytime the operator disconnects the position. When all ROA trunks are found busy, the marker will increment the overflow register and route the call to FRA.

E. Vacant Code Announcement (VCA)—CT Office

2.07 Peg count and overflow registrations should be provided for this group. The peg count register will be incremented by the marker when it receives a blank code routing signal from the decoder. When all VCA trunks are busy, the marker will increment both of these registers and route the call to FRA.

F. Misrouted Non-CAMA Announcement (MCA)—Local Call Intercept—CT Office

2.08 Peg count and overflow registrations should be provided for this group. The peg count register will be incremented by the marker on misrouted CAMA calls when a local call intercept signal is received from the decoder. This registration is useful in analyzing customer dialing irregularities. When all MCA trunks are busy, the marker will increment the peg count and overflow registers and route the call to FRA.

G. Unauthorized CAMA Code Announcement (UCA)—CT Office

2.09 Peg count and overflow registrations should be provided for this group. The peg count register will be incremented by the marker when an unauthorized CAMA routing signal is received from the decoder. When all UCA trunks are busy, the marker will increment the peg count and overflow registers and route the call to FRA.

H. Sender Overload Announcement (SOA)—CT Office

2.10 One peg count register and one overflow register should be provided for this group. The peg count register will be incremented by the marker on each call routed to this trunk group during an overload condition (when all senders in a group are busy) where the attached outgoing trunk fails to obtain a sender when short sender timing is in effect and sender retrial is canceled. When all SOA trunks are busy, the marker will increment the peg count and overflow registers and route the call to FRA.

I. Outgoing Trunk Groups—CT Office

Overflow Register

2.11 *For Nonfinal Route Trunk Groups Associated With a Decoder Route Relay:* Registration for nonfinal route trunk groups is obtained when all trunks in a group are busy. When the marker selects an idle trunk from the trunk group presented to it by the decoder, the marker will increment the peg count register. If the decoder selects an idle subgroup via the route relay, it may bypass one or more busy trunk groups. In this case, both the peg count and overflow registers for the trunk group are scored via the DPO relay. If CBA trunks are provided on a final route, the peg count and overflow relays are scored only if both the message and CBA trunks are busy. The overflow register may also be operated by the marker if the marker finds all trunks busy (FST-ATB) and the second trial attempt is canceled. (Refer to 2.14.)

2.12 *For Final Route Trunk Groups Associated With a Decoder Route Relay and Associated With CBA Trunks:* Because CBA trunks are equipped with chain leads, the decoder can immediately determine when all message and CBA trunks are busy. The decoder operates the DPO

relay, which in turn operates the overflow register each time it finds the message and CBA trunks busy, and directs the marker to route the call to the NCA trunk group. The overflow register is operated from the marker through the trunk block connector if it finds all message trunks busy regardless of whether or not the call is directed to a CBA trunk. Thus, the total overflow registration for the message trunks is recorded on this register.

2.13 *For Final Route Trunk Groups not Associated With a Decoder Route Relay:* Registration for these trunk groups is scored by the marker through the trunk block connector when the marker finds all trunks busy.

Peg Count Register

2.14 For final and nonfinal trunk groups associated with a decoder route relay, the peg count register is operated by the decoder whenever it finds the trunk group busy as described in 2.11. The same peg count register will be operated by the marker through the trunk block connector when the decoder has determined that there is an idle trunk in the group. The peg count register is operated as soon as the trunk block is cut through and records every first trial seizure by the marker. (Refer to 2.11.)

2.15 When the outgoing trunk group does not have a route relay in the decoder, the peg count register is operated by the marker on first trial calls only through the trunk block connector. The peg count register is scored as soon as the trunk is cut through. (Refer to 2.11.)

> *Note:* The decoder DPO relay scores the peg count and overflow registers on both first and second trial attempts. If the decoder finds the trunk group busy after a FST-ATB attempt, two peg counts and only one overflow count will be scored for the trunk group. If the marker finds all trunks busy on the second trial attempt, it does not score the overflow register.

J. Incoming Link Frame—Intertoll or Combined and Toll Completing

Peg Count Register

2.16 The incoming link frame peg count register is arranged so that it will be incremented

when the marker has selected a channel of A, B, and C links to the outgoing link frame. Prior to marker SF option, this register was incremented only on first trial attempts.

Overflow Register

2.17 This register will be incremented on second trial attempts when the marker determines that the A, B, and C links cannot be matched to produce an idle channel to the outgoing link frame. The transfer key associated with this register is rated manufacture discontinued (MFR DISC.).

K. Trunk Block Connector—CT and ET Offices

2.18 A peg count register is incremented each time the marker seizes either the even half or odd half of the trunk block connector (first and second trials and test calls) to find an idle trunk. This data is used for balancing loads between trunk block connectors in each train.

L. Sample Channel—CT and ET Offices

2.19 This register, which is associated with the marker, is incremented once every time the marker seizes a sample link (channel L0, L5, R2, or R7) between the incoming and outgoing link frames.

2.20 Total incoming trunk link frame usage can be obtained by multiplying the total sample link usage by the ratio of total incoming link frame peg count (2.16) to the sample link peg count.

M. Incoming Registers—CT and ET Offices

CAMA Register

2.21 This register will be incremented on all incoming CAMA register seizures including service code (11X) attempts.

Non-CAMA Register

2.22 This register will be incremented on all incoming DP register seizures.

N. Service Code Selector Seizures—CT and ET Offices

2.23 This register scores whenever the customer has dialed an additional digit 1 on a CAMA

trunk to access a service code selector in a noncommon control office.

O. Intertoll Trunk Concentrating Equipment—CT and ET Offices

2.24 This register is incremented when the intertoll trunk concentrating controller circuit makes a continuity check on the outgoing trunk circuit and receives a signal from the distant office.

P. Link Controller—CT and ET Offices

2.25 This peg count register is incremented by one every time the link controller is seized.

Q. Marker—CT and ET Offices

2.26 This register is incremented each time a marker is seized, including both first and second trials, reorders, recorded announcement, and all test calls. The data obtained may be used as a base for busy-hour office loads, determination of office attempts busy hour, and other engineering purposes.

2.27 Marker peg counts will exceed sender peg counts due to test calls which seize a marker via access other than a sender. Decoder marker test (DMT) and outgoing trunk test type calls are prime examples.

2.28 Marker peg count will exceed incoming link frame peg count due to test calls and second trial attempts caused by FST-ATB and channel overflow. If the markers are not arranged to score the incoming link frame peg count on second trial (SF option), two excessive marker counts will result for each second trial attempt.

2.29 The marker peg count will exceed the decoder channel peg count by 2 to 1 on a particular call when a train switch is required following a hold routing.

R. Marker Cancel Second Trial

2.30 This peg count register will be incremented when the traffic control circuit signals the marker to cancel second trial attempts under heavy traffic load conditions as measured by the decoder queue.

2.31 *Cancel Follow With Second Trial:* As part of dynamic overload control, the marker is arranged to cancel second trial when the decoders or decoder channels are all busy due to heavy traffic. Second trial can also be canceled manually by key operation. The traffic control circuit signals the marker to route follow-with-second-trial, all-trunks-busy (FST-ATB) attempts to the NCA trunk group instead of requesting a second trial, thereby eliminating unproductive second trial decoder or decoder channel and marker usage.

S. Decoder—CT Office

2.32 This peg count register is incremented on every decoder seizure including pretranslation, first and second trials, and test calls. The data obtained is used for engineering purposes.

T. Decoder Pretranslation—CT Office (A&M Only)

2.33 This peg count register is incremented every time the decoder releases the sender when more than three digits are required to complete the call. The data obtained is used for engineering purposes.

2.34 When all senders in an office have been modified to cancel pretranslation, this register is not required.

U. Card Translator Card Drop Attempt—CT Office

2.35 This peg count register is incremented for each card drop or attempted drop in a home, foreign area, or emergency card translator. Data obtained is used for engineering and administration purposes.

V. Marker Card Read—CT Office

2.36 This peg count register records the number of translator cards read by the marker. On some calls, when the decoder calls for announcement trunk routing, the marker is not required to read a translator card. Under hold-routing conditions, some calls require the marker to read more than one translator card.

W. 6-Digit Card Drop—Home and Emergency Translator—CT Office

2.37 This register operates every time the home or emergency translator drops a 6-digit card.

The difference between the scorings of this register and the home or emergency total card drop register will give the number of 3-digit cards dropped in the home or emergency translator. The total 6-digit card drop may be determined by the sum of all 6-digit card drop registrations plus the total of all foreign area translator card drop registrations.

X. INWATS Calls—Routed—CT Office

2.38 This register is incremented when the decoder determines that this is an INWATS call from an acceptable band.

Y. INWATS Calls—No Route—CT Office

2.39 This register is incremented when the decoder determines that this is an INWATS call from a nonacceptable band.

Z. Partial Digits—Decoder—CT Office

2.40 This register is incremented when the sender sends insufficient code digits to the decoder for route translations. In turn, the decoder routes this call to the ROA trunks. For senders equipped with the pretranslation feature (MFR DISC.), the decoder signals that more digits are required, releases the sender, and makes itself available to serve another call. This data is useful in analyzing operating and equipment irregularities.

AA. Partial Digits—CT and ET Offices

Incoming Sender Group

2.41 This register will be incremented by one every time the associated sender has registered the A digit (MF senders need only to receive the KP signal) but has not received sufficient digits from an outpulsing source to complete the call in a predetermined time. This data is useful in analyzing operating or equipment irregularities.

Outgoing Sender Group

2.42 This register will be incremented every time a start pulse appears in any of the first four digits of these outgoing senders. Under this condition, the outgoing sender will cause the return of reorder tone from the outgoing trunk circuit and release. The data is useful in analyzing equipment irregularities.

Incoming Register Group

2.43 This register is incremented by one every time the incoming register is seized and has registered the A digit but has not received sufficient digits from an outpulsing source to complete the call.

AB. Incoming Senders—CT and ET Offices (MF-DP-CAMA or Overseas)

2.44 This peg count register will be incremented by one every time a sender is connected to a marker through a decoder connector.

2.45 Sender peg count, which is used in the computation of sender holding time, is inflated to some degree by the fact that registrations are made on sender test calls and on second trials due to FST-ATB and channel overflow (COF). However, inflation of sender peg count occurs due to SOA routing as a result of intersender load control time-outs waiting for a distant sender to be attached. Sender retrial and FATR (final attempt trouble record) also result in extra sender peg counts being recorded, when in reality the sender has only been seized once. Subtract TR2, SOA, retrial, and final attempt time-outs to obtain true sender peg count.

AC. Outgoing Senders—CT and ET Offices (Revertive and PCI)

2.46 This peg count register is incremented every time a sender is seized.

AD. Permanent Signal—CT and ET Offices

Incoming Sender Group

2.47 This register will be incremented by one every time a MF or dial pulse sender is seized, but does not record any digits within a predetermined time, and the call is routed to reorder. These registrations are useful in analyzing equipment irregularities.

Incoming Register Group

2.48 This register will be incremented by one every time the incoming register is seized but receives no digits during a predetermined interval. These registrations will be useful in analyzing "off-hour" conditions.

AE.   CAMA Registers

Transverters—CT and ET Offices

Automatic Identified

2.49   This register is incremented on all calls when the calling customer is identified automatically by the originating office. The central office code and line number are registered in the transverter as an automatically identified call.

Operator Identified

2.50   This register is incremented when the calling customer's central office code and line number are obtained by calling in the CAMA operator who requests this information from the customer. These calls are registered in the transverter as operator identified calls. The sum of these registers (2.49 and 2.50) gives the total transverter seizures.

Bulk Billed

2.51   This register, which is associated with the transverters, is incremented by one every time the transverter fails to properly record on a completed bulk billed call.

Match Check—False Calling Number

2.52   This register will be incremented by one the number of times a customer gives the called number rather than his own line number to the CAMA position operator. This information is useful for administrative purposes.

Wrong Calling Code

2.53   This register will be incremented by one every time a nonworking office code is dialed or when the office code associated with the CAMA trunk group served by the billing indexer does not match the calling code given by the customer.

AF.   CAMA Position Request—CT and ET Offices

2.54   This register is incremented by one every time a CAMA position is seized, including test calls.

AG.   CAMA Position Disconnect—CT and ET Offices

2.55   This register is incremented every time the position is disconnected by the CAMA operator.

AH.   AMA Recorder—CT and ET Offices

2.56   This register, associated with each regular or emergency recorder, is incremented by one on all seizures. The data from this register, in conjunction with the usage register, will establish the holding time per recorder which is used to determine AMA recorder requirements.

AI.   Traffic Separation—CT Office

2.57   Registers are provided for each decoder to record various combinations of intrastate and interstate traffic. These registers score when a marker is engaged by a decoder and the translator card involved is punched for traffic separation. Second trials and sender test calls are not scored. Decoder test calls are normally not scored, but the decoder test circuit is equipped to test these registers when necessary. This data is used in the separation and allocation of switching costs. The operation of the proper registers is controlled by the class mark of the incoming trunks and translator card punchings for the various classes of outgoing traffic. Four incoming class marks and seven outgoing traffic separation indications are provided which allow 28 possible combinations as follows:

INC CLASS MARKS	TRAFFIC SEPARATION INDICATIONS						
	A	B	C	D	E	F	G
0	0A	0B	0C	0D	0E	0F	0G
1	1A	1B	1C	1D	1E	1F	1G
2	2A	2B	2C	2D	2E	2F	2G
3	3A	3B	3C	3D	3E	3F	3G

Traffic separation registers are provided on the basis of one register per decoder per combination required. More than one combination may be scored on a single register. The number of registers to be provided should be determined by consultation with the Division of Revenue people. To make proper division of revenue adjustments, it will be necessary to make occasional supplementary call counts on a manual basis on incoming trunks from some switchboards, such as toll dial assistance,

carrying both intrastate and interstate traffic. Other special records may be required to determine the amount of interstate traffic being switched over intrastate trunk groups or vice versa.

AJ.   International DDD—CT and ET Offices

Overseas Outgoing

2.58   This register will be incremented by the overseas sender on all outgoing overseas calls switched at the gateway office.

Incoming Overseas Customer

2.59   This register will be incremented by the overseas sender on all incoming calls terminating in the North American continent with the code format of KP1-0-10 digits. The digit 0 immediately following the KP1 signal identifies the call as customer-dialed. Incoming calls not meeting this code format requirement or incoming overseas test calls will not increment this register.

Incoming Overseas Operator

2.60   This register will be incremented by the overseas sender on operator-originated calls terminating in the North American continent with the code format KP1-2-10 digits. The digit 2 immediately following the KP1 signal identifies the call as operator-originated. Incoming calls not meeting this code format requirement or incoming overseas test calls will not increment this register.

Incoming Overseas Transit

2.61   This register will be incremented by the overseas sender on a through-switched call that arrives on one intercontinental-type link and is switched to another intercontinental link. Since incoming and through-switched calls arrive on a common trunk group, the frequencies that compose the KP pulse are used to distinguish between terminal (KP1) and transit (KP2) traffic.

Incoming Overseas Test

2.62   This register will be incremented by the overseas sender at gateway offices that are arranged to accept certain incoming test calls of the code format KP1-7-code 12-0XX-ST. Upon receipt of this code format, the gateway office prevents intervention by the language assistance operator and repeats toward the test connection any received forward transfer signals.

Incoming Overseas Screening Failure

2.63   This register will be incremented by the overseas sender when an incoming overseas customer-dialed call fails any one of the following checks:

(a)   An area code must be registered in the A, B, and C digits.

(b)   Exactly ten digits must be dialed.

(c)   A digit 0 or 1 cannot be registered as a D digit.

(d)   A digit 0 or 1 cannot be registered in the E digit (YU option) as long as area codes are not used as local office codes.

(e)   The D, E, and F digits cannot be of the form N11 (YW option).

(f)   Digits D, E, and F cannot be registered as 5, 5, 5.

AK.   Clock—Elapsed Time—CT and ET Offices

2.64   This register is incremented every 6 seconds with the operation of the 10-ipm interrupter and impulse clock circuit. This register is read with other registers at desired intervals to check the accuracy of register reading time intervals.

AL.   Group Busy—CT and ET Offices (A&M)

Incoming Trunks Other Than Intertoll (A&M)

2.65   This register will be incremented every time an incoming toll tandem trunk group or subgroup is busy. This register may be omitted on 2-wire keypulsing tandem groups, where a register is provided at the originating end of the group. When tandem trunk groups are connected to the TUR, these groups cannot be connected to this register.

AM. Group-Busy Time Duration—CT and ET Offices

Incoming Intertoll Trunks (A&M)

2.66 This register is incremented by one every 6 seconds when all trunks in the subgroup are busy. It is associated with the 10-ipm interrupter and impulse circuit.

Intertoll Trunk Concentrating Equipment—Outgoing Trunk

2.67 This register is incremented by one every 6 seconds when all trunks in the subgroup are busy. It is associated with the 10-ipm interrupter and impulse circuit.

Senders—Without Sender Control Equipment (A&M)

2.68 This register will be incremented every 1.3 seconds when all senders of a group are busy.

AN. Sender Attachment Delay Recorder (SADR)—CT and ET Offices

2.69 These registers record the number of test calls offered by the SADR equipment (on a sender group basis), the total number of tests calls placed, and the number of delays encountered in sender attachment greater than 3 or 7 seconds, whichever is desired. This circuit also provides alarm delay lamps for a maximum of two sender types to indicate when the number of such delays (3 or 7 seconds) encountered in all groups of each type sender exceeds the predetermined count on any one cycle. A maximum of 32 peg count and delay registers may be provided per office and used in sets of two registers—one set per sender group.

Calls (PC)—Sender Group Basis

2.70 This register records the number of test calls to a particular sender group.

Calls Delayed (DC)—Sender Group Basis

2.71 This register records the number of test calls to a particular group of senders which are delayed in attaching a sender within 3 or 7 seconds.

Total Calls (TPC)—Sender-Type Basis

2.72 This register records the total number of test calls made to a particular type of sender.

Total Calls Delayed (TDC)—Sender-Type Basis

2.73 This register records the total number of test calls to a particular type of sender which are delayed in attaching a sender within 3 or 7 seconds.

3. SOFTWARE REGISTERS

3.01 These traffic registers (Fig. 2) are under control of the SPC (stored program control).

A. Total Decoder Channel Attempts (CHTØT)

3.02 Every decoder channel translation request recognized by the ETS is recorded on this register, including test calls. The decoder channel peg count will exceed the marker peg count whenever a trouble recording is made before marker selection such as when a stuck sender, a sender retrial, or a ROA, VCA, or ANF (ANI failures) is trouble recorded.

B. Second Trial Attempts—Decoder Channel (CH2T)

3.03 Every nontest, second trial, decoder channel translation request recognized by the ETS is recorded on this register, excluding test calls. Decoder channel second trials are key indicators of overall office operation and are caused by the following conditions:

(a) FST-ATBs (decoder yes/marker no)

(b) COFs (office channel blockage—second trial)

Note: Office channel blockage is not recorded on any register on first trial but may be a significant item.

(c) Decoder channel trouble records

(d) Marker trouble records

(e) Trouble recorded stuck senders

(f) Trouble recorded trapped calls (reorders, sender retrials, vacant codes, etc).

C. Initial Hold Attempts (IH)

3.04 This register will be incremented on every first trial, nontest, nonsender, retrial translation performed by the ETS. The IH (initial hold) is incremented when the initial route selected is nonscannable (not associated with a GB relay circuit) and additional subgroups or alternate routes are available in the event the selected subgroup of trunks is found busy by the marker. Hold routing instructions are given on the preceding calls by the call routing program, as the marker and decoder channel remain associated until all subgroups and alternate routes have been exhausted. Final, single subgroup trunk groups do not use hold routing whether they are scannable or nonscannable.

D. Initial Nonhold Attempts (INH)

3.05 This register will be incremented on every first trial scannable nontest and nonsender retrial translation performed by the ETS. The INH register will also be incremented when the initial route selected is nonscannable and consists of a single subgroup with FMB, FOF, or FRO routing instructions. Hold routing instructions are not associated with this type of call because the decoder channel is released. The sum of the IH and INH registers provide an accurate count of the no-test traffic being switched. Data obtained from these registers is used in calculating the number of decoder channels required.

E. Subsequent Hold Attempts (SH)

F. Subsequent Nonhold Attempts (SNH)

3.06 One of these two registers is incremented when the marker finds all trunks busy within an offered subgroup, while employing hold routing, and requests additional routing information from the ETS. The SH (subsequent hold) is incremented if hold routing is again employed on the subsequent selected subgroup or route. If it is not, the SNH (subsequent nonhold) is incremented. If the subsequent subgroup or route selected appears on a different train from the initial route, the decoder channel will release the original marker and select a marker for the other train. When this is done, two marker peg counts are recorded but only one decoder channel peg count is recorded. Data obtained from these registers is used in determination of decoder channels.

G. Decoder Channel (CHIN)—Individual

3.07 Individual decoder channel peg counts are recorded on these registers. The sum of these registers should equal the CHTØT register count. (Refer to 3.02.)

H. Through Traffic—Through (TPCTH), Incoming (TPCIH), Outgoing (TPCØH)

3.08 A through peg count (TPC) classification, assigned on the ETS questionnaire, is associated in memory with every incoming and outgoing trunk group. During each translation, the appropriate register to be incremented is determined by comparing the incoming trunk group TPC classification and the *first choice* outgoing trunk group TPC classification (whether busy or idle). The first three registers, TPCTH, TPCIH, and TPCØH, record through, incoming, and outgoing intertoll traffic, respectively. These registers are not incremented on second trials, test calls, sender retrials, or sender-requested announcement routings.

I. Outgoing Trunk Groups

3.09 A peg count and overflow register is assigned to each outgoing trunk group. The incrementation of the peg count and overflow registers is under the control of the traffic peg count program (TPCP), which reads the status of the marker TKS (trunk selected) and MATB (all trunks busy) ferrods. With the TKS ferrod saturated, the peg count register is incremented; when the MATB ferrod is saturated, both the peg count and overflow registers are incremented. If the MTRL (marker trouble found) ferrod is saturated on first trial calls, the register counts are discarded. On second trial MTRL appearances, both the peg count and overflow registers are incremented. In all cases, other than a first trial MTRL, the register numbers previously stored away are retrieved when the marker saturates one of the preceding ferrods. For these registers, both the peg count and overflow registers are incremented. Neither the peg count nor overflow register is incremented on test calls.

J. Incoming Trunk Groups

3.10 There are 31 register assignments available for recording incoming attempts. One or more incoming trunk groups can be assigned to each of these registers, or all trunk groups from a particular distant region could be assigned to

one register, providing a source peg count of all calls received from that region. These register readings can be useful to the network management personnel.

K. Traffic Separation Registers

3.11 The purpose of the traffic separation registers is to record the various combinations of interstate and intrastate traffic for use in the allocation of switching costs. The various combinations of traffic are determined by the class mark assigned to the incoming trunk, which is obtained from the incoming trunk group information table (ITKTAB), and the outgoing trunk classes are obtained from the route pattern table (RPTAB). Four incoming class marks and seven outgoing traffic separation indications are provided, totaling 28 possible combinations. The proper register (1 through 28) will be incremented when any one of the four incoming trunk classes of service is used in connection with any of the seven outgoing trunk classes of service.

L. No Circuit Announcement (NCAP/NCAØ)

3.12 One peg count (NCAP) register and one NCAØ peg count register are assigned to this group. The NCAP register will be incremented when the final route (scannable) is found busy to the ETS with routing instruction of FMB or FOF. When network controls are in effect, those affected calls may also be routed to this group. Test and sender retrial attempts will not increment the NCAP register.

3.13 The overflow (NCAØ) register is incremented if the marker indicates by its MATB ferrod that all NCA trunks are busy. A marker-initiated trouble release will not increment this register since it will be incremented on second trial attempts. The total NCA peg count or the total NCA overflow for a particular period is obtained as follows:

(a) NCA peg count—NCA teletype peg count plus NCA 14-type register peg count. (Refer to 2.05.)

(b) NCA overflow—NCA teletype overflow count plus NCA 14-type register overflow count. (Refer to 2.05.)

M. No Circuit Announcement Toll Completing (NCTC) and Intertoll (NCIT)

3.14 One of these two registers, NCTC and NCIT, is incremented when the ETS has exhausted a routing pattern without finding an idle route. This is possible only when the final route is scannable, ie, assigned to GB relays. The TPC classification of the final route in the busy routing pattern is used to determine which of the two registers is incremented. Following incrementation of either the NCTC or NCIT register, the call will be routed to an NCA trunk group if the routing instruction associated with the final route is FMB or FOF. Traffic routed directly to NCA trunk groups due to network controls is not recorded on the NCTC or NCIT register. Normally, the NCA peg count will be approximately equal to the sum of the NCTC and NCIT registers.

N. Reorder Announcement

O. Vacant Code

P. Misrouted Non-CAMA (Local Call Intercept)

Q. Sender Overload

R. Unauthorized CAMA Route

3.15 A peg count and an overflow register are assigned to each of the announcement groups. These registers are incremented on nontest, nonsender, retrial traffic. On a marker-initiated trouble release, these registers are not incremented since they will be incremented on the second trial attempt. The ETS will direct calls to these announcement trunks and increment the proper register when the marker indicates how it has disposed of the call. The type of call scored on these registers will be the same as scored on the mechanical registers as described in 2.06 through 2.10.

S. Emergency Announcement (EA1 and EA2)

3.16 A peg count and an overflow register are assigned to each of these announcement groups. The peg count register will be incremented once by the ETS for each call routed to the EA1 or EA2 announcement trunks following a network control routing change instruction via the network control console. The overflow register will be incremented once by the ETS for each call overflowing

the EA1 or EA2 announcement trunks. Overflow calls from the individual EA1 and EA2 announcement subgroups will be routed to FRA.

T. Terminating INWATS—Calls Routed

3.17 A peg count register is assigned and incremented by the ETS to indicate the number of times that this INWATS call is from an acceptable band.

U. Terminating INWATS—Calls not Routed

3.18 A peg count register is assigned and incremented by the ETS to indicate the number of times this INWATS call is from a nonacceptable band.

4. MANUFACTURE DISCONTINUED REGISTERS

4.01 The registers in Table A are no longer provided for engineering or administration as shown in CD-68412-01 and will not be provided with new offices. These registers were once standard and may be existing in some offices.

5. ESTERLINE-ANGUS RECORDERS

5.01 It is suggested that each 4A/4M installation be provided with at least one Esterline-Angus 20-pen recorder. This recorder is a portable-type that may be used for securing special holding time data on senders, decoders, markers, and controllers, as well as indicating equipment reactions not otherwise disclosed.

5.02 It is not contemplated that these recorders will be permanently wired to any of the common control equipment. However, one recorder may be mounted in the traffic console or in traffic quarters with 20 leads cabled to a cross-connection frame if adequate supervision and maintenance are available during all hours of a possible 24-hour study period at this traffic location.

6. TRAFFIC USAGE RECORDER (TUR) REGISTERS

6.01 The Traffic Order should specify the assignment of usage registers to the equipment on which usage is to be measured (Fig. 3).

TABLE A — MANUFACTURE DISCONTINUED REGISTERS

TYPE REGISTER	CD-68412-01 ITEM NO.	PARAGRAPH NO.
PEG COUNT		
Outgoing Link Frame	222	2.41
Outgoing Link Frame Subgroup	222	2.42
Incoming Link Frame	223	2.43
Incoming Link Frame Subgroup	223	2.44
Trunk Block Connector	224	2.45
Reorder Trunk Time Alarm	228	2.46
Through Traffic	229	2.47
Sender	231B	2.48
OVERFLOW		
Incoming Link Frame		
Intertoll or Combined	202	1.41
Toll Completing	203	1.41

TABLE A — MANUFACTURE DISCONTINUED REGISTERS (Cont)

CD-68412-01

TYPE REGISTER	ITEM NO.	PARAGRAPH NO.
OVERFLOW (Cont)		
Outgoing Link Frame		
Intertoll or Combined	204	1.42
Toll Completing	205	1.42
Outgoing Frame and Incoming Frame Overflow Register Transfer	206	1.43
DELAY		
Sender Link	241	6 (a)
Sender Link	320	6 (b)
GROUP-BUSY TIME DURATION		
No. 4A Toll Senders—When sender traffic control circuit is provided	262A	7.02
Overload timing effective in incoming senders	263	7.03
LOAD READING		
Incoming Link Frame	270	8.01
Outgoing Link Frame	271	8.01
Sender Group Load	272	8.01
DC Ammeter (Instantaneous)	273	8.01
Recording Ammeter	274	8.01
Ampere Minute Meter	275	8.01
Total Load Recording Ammeter	276	8.02

6.02 The decoder channel is the only ETS equipment whose usage is to be measured on the TUR. The following TUR registers are normally provided as indicated.

(a) *Decoder Channel Usage—Total*—Provide one register per channel. This register records total channel usage, including maintenance. Decoder channel usage should be measured on fast scan.

(b) *Decoder Channel Usage—Maintenance*— Provide one register per office. This register records total decoder channel maintenance usage.

(c) *Sender Usage—Total*—Provide one register per 25 or less senders of a type for 10-second scan and one register per group for 100-second scan. This register records total sender usage, including maintenance.

(d) *Sender Usage—Maintenance*—Provide one register per sender group. This register records maintenance usage (plugged busy plus test frame usage).

(e) *Controller Usage—Total*—Provide one register per controller. This register records total controller usage, including maintenance.

(f) *Controller Usage—Maintenance*—Provide one register per controller group. This register records maintenance usage (plugged busy plus test frame usage).

(g) *Decoder Usage—Total—CT Office Only*—Provide one register per decoder.

This register records total decoder usage, including maintenance.

(h) *Decoder Usage—Maintenance—CT Office Only*—Provide one register per office or per decoder subgroup under new subgrouping arrangements. This register records total decoder maintenance usage (plugged busy plus test frame use).

(i) *Foreign Area Translator Usage—Total—CT Office Only*—Provide one register per foreign area translator. This register records total foreign area translator usage, including maintenance.

(j) *Foreign Area Translator Usage—Maintenance—CT Office Only*—Provide one register for each group of foreign area translators. This register records maintenance usage for each group of foreign area translators, including plugged busy.

(k) *Marker Usage—Total*—Provide one register per marker. This register records total usage per marker, including maintenance.

(l) *Marker Usage—Maintenance*—Provide one register per marker group. This register records maintenance usage per marker group, including plugged busy and test frame use.

(m) *CAMA-DP Register Usage—Total*—Provide one register per incoming register group. This register records total CAMA-DP register usage, including maintenance.

(n) *CAMA DP Register Usage—Maintenance*—Provide one register per transverter group to record maintenance usage.

(o) *Transverter Usage—Total*—Provide one register per transverter. This register scores total transverter usage, including maintenance.

(p) *Transverter Usage—Maintenance*—Provide one register per transverter group to record maintenance usage.

(q) *Recorder Usage*—Provide one register per AMA recorder. The data from this register, in conjunction with the peg count register, establishes the holding time per recorder which is used to determine AMA recorder requirements.

(r) *Incoming Link Frame Usage—Total Sample*—Provide one type KS-16493 register per 15 or less incoming link frames, or one 14-type register per 7-1/2 or less incoming link frames. This register records total sample usage on associated frames on sample links (0 and 5 left and 2 and 7 right) by means of the detector group usage feature of the TUR.

(s) *Link Frame Usage—Sample Link Usage per Switch*—Provide one register per switch for each incoming or outgoing link frame, whichever is greater. The use of the register grouping feature of the TUR will permit using the same registers to measure incoming link frames at one time and outgoing link frames at some other time. This register records usage of the four sample links (0 and 5 left and 2 and 7 right) of each individual trunk switch of the link frame.

(t) *Sender Link Frame Usage—Total*—One register per switch per sender link frame may be provided if desired. The use of the register grouping feature will permit using the same registers used for sample link usage. This register records usage on four links associated with one switch of the sender link frame.

(u) *Incoming and Outgoing Trunk Group Usage*—Provide one register per group or subgroup as required. This register records usage in terms of CCS. Maintenance busy trunks are not excluded.

(v) *Tandem Trunk Group Usage*—Provide one register per trunk group as required. This register records usage in terms of CCS.

(w) *121, 131, LW Operator Groups, etc, Usage*—Provide one register per group as required. This register records group usage in terms of CCS.

(x) *Toll Completing Trunk Group Usage*—Provide one register per selected group as required. This register records group usage in terms of CCS.

(y) *CAMA Position Usage*—Provide one register per CAMA operating unit. This register scores the total service usage of CAMA positions.

(z) *Cycle Register*—One register is provided per field of 149 TUR registers. If the registers in a field are assigned in the register grouping arrangement, additional cycle registers may be provided. These registers are controlled from the TUR and are incremented each time a 100-second cycle has been made by the TUR.

7. DETECTOR GROUP USAGE REGISTER

7.01 The detector group usage feature of the TUR permits the totalization of a minimum of 100 like-numbered contacts on any one switch. Under certain conditions, a detector can serve 200, 300, or up to a maximum of 600 like-numbered contacts on a single register. It is recommended that one 14-type register be assigned to a maximum of 300 usage leads, or that a magnetic counter be provided when the usage leads to be measured exceed 300.

7.02 The use of detector group registers is of particular value, both as an administrative and engineering tool, in that it provides a means of determining loads by loading division on a minimum of registers without affecting the registrations of individual group scorings, which may be taken simultaneously. The equipment components, normally assigned on the basis of loading division in the 4A/4M offices, are the incoming trunk link frames by trains.

REGISTRATION	PAR.	DESIGNATION		MECHANICAL REGISTER	PROVIDE
		PC	OVFL TIMING		
Final reorder announcement	2.01	x		x	1 per trunk subgroup
			x	x	1 per train
No circuit announcement	2.04	x		x	1 per trunk subgroup
			x	x	1 per train
Reorder announcement	2.06	x		x	1 per trunk subgroup
			x	x	1 per train
Vacant code announcement	2.07	x		x	1 per trunk group
			x	x	1 per trunk group
Misrouted non-CAMA (local call intercept) announcement	2.08	x		x	1 per trunk group
			x	x	1 per trunk group
Unauthorized CAMA route announcement	2.09	x		x	1 per trunk group
			x	x	1 per trunk group
Sender overload announcement	2.10	x	(A&M only)	x	1 per trunk subgroup
			x	x	1 per train
Outgoing trunk groups (associated route relay in the decoder)					
Nonfinal routes	2.11		x	x	1 per trunk group
	2.14	x		x	1 per trunk group
Final routes associated with circuit-busy announcement	2.12		x	x	1 per trunk group
	2.14	x		x	1 per trunk group
Outgoing trunk groups (not associated with route relay in decoder)	2.13		x	x	1 per trunk group
	2.15	x		x	1 per trunk group
Incoming link frame					
Intertoll or combined	2.16	x		x	1 per frame
Toll completing	2.16	x		x	1 per frame
Intertoll or combined	2.17		x	x	1 per train
Toll completing	2.17		x	x	1 per train
Trunk block connector	2.18	x		x	2 per trunk block connector

Fig. 1—Traffic Registers—Card Translator Office (Sheet 1 of 4) (1.01)

REGISTRATION	PAR.	DESIGNATION		MECHANICAL REGISTER	PROVIDE
		PC	OVFL TIMING		
Sample link channels L0, L5, R2, and R7	2.19	x		x	1 per marker
Incoming register CAMA	2.21	x		x	1 per 10 incoming registers — CAMA
Non-CAMA	2.22	x		x	1 per 10 incoming registers
Service code seizures	2.23	x		x	1 per 10 incoming registers — CAMA
Intertoll trunk concentrating equipment	2.24	x		x	1 per intertoll trunk concentrating equipment controller circuit
Link controller	2.25	x		x	1 per link controller
Marker	2.26	x		x	1 per marker (KS-16493-type register)
Marker cancel second trial	2.30	x		x	1 per marker train
Decoder	2.32	x		x	1 per decoder (KS-16493-type register)
Decoder — pretranslation (A&M only)	2.33	x		x	1 per decoder (not required when all senders are modified to cancel pretranslation)
Card translator attempt to drop card Home	2.35	x		x	1 per home translator
Foreign area	2.35	x		x	1 per foreign area card translator
Emergency	2.35	x		x	1 per emergency card translator
Marker card read	2.36	x		x	1 per marker
6-Digit card drop Home translator	2.37	x		x	1 per home translator
Emergency translator	2.37	x		x	1 per emergency translator
INWATS—route	2.38	x		x	1 per decoder group
INWATS—no route	2.39	x		x	1 per decoder group
Partial digits—decoder	2.40	x		x	1 per decoder group
Partial digits Incoming sender group	2.41	x		x	1 per 40 or less senders of one type
					1 per 10 or less senders of overseas-type in offices without auxiliary recording control; 1 per 40 or less senders with auxiliary recording control
Outgoing sender group	2.42	x		x	1 per 40 or less senders of one type

Fig. 1—Traffic Registers—Card Translator Office (Sheet 2 of 4) (1.01)

REGISTRATION	PAR.	DESIGNATION		MECHANICAL REGISTER	PROVIDE
		PC	OVFL TIMING		
Partial digits (Cont)					
Incoming register group	2.43				1 per incoming register link frame
Incoming senders — MFP, DP, CAMA, or overseas	2.44	x		x	1 per decoder-connector per group of 40 senders or less
Outgoing senders — revertive or PCI	2.46	x		x	1 per 10 senders of a given group
Permanent signal					
Incoming sender group	2.47	x		x	1 per 40 or less senders of one type
					1 per 10 or less senders of overseas-type in offices without auxiliary recording control; 1 per 40 or less senders with auxiliary recording control
Incoming register group	2.48	x		x	1 per register incoming link frame
Transverter					
Automatic-identified calls	2.49	x		x	1 per transverter
Operator-identified calls	2.50	x		x	1 per transverter
Bulk billed	2.51	x		x	1 per transverter group
Match check (false calling number)	2.52	x		x	1 per transverter group
Wrong calling code	2.53	x		x	1 per transverter group
CAMA position request	2.54	x		x	1 per CAMA position
CAMA position disconnect	2.55	x		x	1 per office
AMA recorder	2.56	x		x	1 per regular and emergency recorder
Traffic separations	2.57	x		x	1 per decoder per combination of incoming and outgoing trunk class marks required
International DDD					
Overseas outgoing	2.58	x		x	1 per office
Incoming overseas customer	2.59	x		x	1 per office
Incoming overseas operator	2.60	x		x	1 per office
Incoming overseas transit	2.61	x		x	1 per office
Incoming overseas test	2.62	x		x	1 per office
Incoming overseas screening failure	2.63			x	1 per office
Clock (elapsed time)	2.64	x		x	1 per bay of registers excluding bays equipped with cameras

Fig. 1—Traffic Registers—Card Translator Office (Sheet 3 of 4) (1.01)

| REGISTRATION | PAR. | DESIGNATION | | MECHANICAL REGISTER | PROVIDE |
		PC	OVFL TIMING		
Group busy (A&M only)					
Incoming trunks other than intertoll	2.65	x		x	1 per trunk group
Group-busy time duration					
Incoming intertoll trunks (A&M only)	2.66		x	x	1 per group or subgroup of incoming intertoll trunks
Intertoll trunk concentrating equipment — outgoing trunk	2.67		x	x	1 per trunk group
Senders (A&M only)	2.68		x	x	1 per type of senders engineered as a common group
Sender attachment delay recorder	2.69				
Calls per sender group basis (PC & DC)	2.70, 2.71	x		x	2 per sender group or key frame group (OUT, DP, MFP, CAMA, or overseas)
Total calls — sender-type basis (TCP & TDC)	2.72, 2.73	x		x	2 per type sender (DP, MFP, CAMA, or overseas)

Fig. 1—Traffic Registers—Card Translator Office (Sheet 4 of 4) (1.01)

REGISTRATION	PAR.	DESIGNATION		TYPE OF REGISTER		PROVIDE
		PC	OVFL TIMING	MECHANICAL	SOFTWARE	
Final reorder announcement	2.01	x		x		1 per trunk subgroup
			x	x		1 per train
No circuit announcement (NCA)	2.05	x		x		1 per train
			x	x		1 per train
Incoming link frame						
Intertoll or combined	2.16		x	x		1 per train
Toll completing	2.16		x	x		1 per train
Intertoll or combined	2.17	x		x		1 per frame
Toll completing	2.17	x		x		1 per frame
Trunk block connector	2.18	x		x		2 per trunk block connector
Sample link (channels L0, L5, R2, and R7)	2.19	x		x		1 per marker
Incoming registers—CAMA	2.21	x		x		1 per 10 incoming registers—CAMA
Incoming registers—non-CAMA	2.22	x		x		1 per 10 incoming registers
Service code seizures	2.23	x		x		1 per 10 incoming registers—CAMA
Intertoll trunk concentrating equipment	2.24	x		x		1 per trunk concentrating equipment controller circuit
Link controller	2.25	x		x		1 per link controller
Marker	2.26	x		x		1 per marker (KS-16493-type)
Marker cancel second trial	2.30	x		x		1 per marker train
Partial digits						
Incoming sender group	2.41	x		x		1 per 40 or less senders of one type
						1 per 10 or less senders of overseas—type in offices without auxiliary recording control; 1 per 40 or less senders with auxiliary recording control
Outgoing sender group (revertive or PCI)	2.42	x		x		1 per 40 or less senders of one type
Incoming register group	2.43	x		x		1 per incoming register link frame
Incoming senders (MFP, DP, CAMA, or overseas)	2.44	x		x		1 per decoder-connector per group of senders (40 or less)

**Fig. 2—Traffic Registers—Electronic Translator System
(Sheet 1 of 4) (1.01, 3.01)**

| REGISTRATION | PAR. | DESIGNATION | | TYPE OF REGISTER | | PROVIDE |
		PC	OVFL TIMING	MECHANICAL	SOFTWARE	
Outgoing senders (revertive or PCI)	2.46	x		x		1 per 10 senders of a given group
Permanent signal						
Incoming sender group	2.47	x	.	x		1 per 40 or less senders of one type
						1 per 10 or less senders of overseas type in office without auxiliary recording control; 1 per 40 or less senders with auxiliary recording control
Incoming register group	2.48	x		x		1 per incoming register link frame
Transverter						
Automatic-identified calls	2.49	x		x		1 per transverter
Operator-identified calls	2.50	x		x		1 per transverter
Bulk billed	2.51	x		x		1 per transverter group
Match check (false calling number)	2.52	x		x		1 per transverter group
Wrong calling code	2.53	x		x		1 per transverter group
CAMA position request	2.54	x		x		1 per CAMA position
CAMA position disconnect	2.55	x		x		1 per office
AMA recorder	2.56	x		x		1 per each regular and emergency recorder
International DDD						
Overseas outgoing	2.58	x		x		1 per office
Incoming overseas customer	2.59	x		x		1 per office
Incoming overseas operator	2.60	x		x		1 per office
Incoming overseas transit	2.61	x		x		1 per office
Incoming overseas test	2.62	x		x		1 per office
Incoming overseas screening failure	2.63	x		x		1 per office
Clock (elapsed time)	2.64	x		x		1 per bay of registers excluding bays equipped with cameras

**Fig. 2—Traffic Registers—Electronic Translator System
(Sheet 2 of 4) (1.01, 3.01)**

REGISTRATION	PAR.	DESIGNATION		TYPE OF REGISTER		PROVIDE
		PC	OVFL TIMING	MECHANICAL	SOFTWARE	
Group busy (A&M only)						
Incoming trunks other than intertoll	2.65	x		x		1 per trunk group
Group-busy time duration						
Incoming intertoll trunks (A&M)	2.66		x	x		1 per trunk group or subgroup of incoming intertoll trunks
Intertoll trunk concentrating equipment — outgoing trunk	2.67		x	x		1 per trunk group
Senders (A&M)	2.68		x	x		1 per type of senders engineered as a common group
Sender attachment delay recorder	2.69					
Calls per sender group basis (PC & DC)	2.70, 2.71	x		x		2 per sender group or key frame group (out, DP, MFP, CAMA, or overseas)
Total calls—sender-type basis (TCP & TDC)	2.72, 2.73	x		x		2 per type sender (DP, MFP, CAMA, or overseas)
Total decoder channel Attempts (CH∅T)	3.02	x			x	Teletype printout
Second trial attempts (CH2T)	3.03	x			x	Teletype printout
Initial hold attempts (IH) (first trial service calls)	3.04	x			x	Teletype printout
Initial nonhold attempts (INH) (first trial service calls)	3.05	x				Teletype printout
Subsequent hold attempts (SH) (first trial service calls)	3.06	x			x	Teletype printout
Subsequent nonhold attempts (SNH) (first trial service calls)	3.06	x			x	Teletype printout
Decoder channel 0 to 9 (CHIN 0-9) (individual channel attempts)	3.07	x			x	Teletype printout
Through traffic peg count						
Through (TPCTH)	3.08	x			x	Teletype printout
In (TPCIH)	3.08	x			x	Teletype printout
Out (TPC∅H)	3.08	x			x	Teletype printout
Outgoing trunk groups	3.09	x	x		x	Teletype printout

Fig. 2—Traffic Registers—Electronic Translator System (Sheet 3 of 4) (1.01, 3.01)

REGISTRATION	PAR.	DESIGNATION		TYPE OF REGISTER		PROVIDE
		PC	OVFL TIMING	MECHANICAL	SOFTWARE	
Incoming trunk groups	3.10	x			x	Teletype printout
Traffic separations	3.11	x			x	Teletype printout
TORC—final route to regional center			x		x	Teletype printout (regional centers only)
TORC—via route to regional center		x			x	Teletype printout (regional centers only)
No circuit announcement	3.12	x			x	Teletype printout
	3.12		x		x	Teletype printout
No circuit announcement						
Toll completing	3.14	x			x	Teletype printout
Intertoll	3.14	x			x	Teletype printout
Reorder announcement	3.15	x			x	Teletype printout
	3.15		x		x	Teletype printout
Vacant code announcement	3.15	x			x	Teletype printout
	3.15		x		x	Teletype printout
Misrouted non-CAMA (local call intercept) announcement	3.15	x			x	Teletype printout
	3.15		x		x	Teletype printout
Sender overload announcement	3.15	x			x	Teletype printout
	3.15		x		x	Teletype printout
Unauthorized CAMA route announcement	3.15	x			x	Teletype printout
	3.15		x		x	Teletype printout
Emergency announcement (EA1)	3.16	x			x	Teletype printout
	3.16		x		x	Teletype printout
Emergency announcement (EA2)	3.16	x			x	Teletype printout
	3.16		x		x	Teletype printout
Terminating INWATS						
Calls routed	3.17	x			x	Teletype printout
Calls not routed	3.18	x			x	Teletype printout

Fig. 2—Traffic Registers—Electronic Translator System
(Sheet 4 of 4) (1.01, 3.01)

REGISTRATION	DESIGNATION				PAR.	PROVIDE
	CT OFFICE		ETS OFFICE			
	USAGE	MTCE	USAGE	MTCE		
Decoder channel			x		6.02(a)	1 per decoder channel
				x	6.02(b)	1 per office
Senders	x		x		6.02(c)	1 register per 25 or less senders of a type for 10-second scan
		x		x		1 register per group for 100-second scan
				x	6.02(d)	1 register per sender group
Controller	x		x		6.02(e)	1 register per controller
		x		x	6.02(f)	1 register per controller group
Decoder	x				6.02(g)	1 register per decoder
		x			6.02(h)	1 register per office or decoder subgroup under new subgrouping arrangements
Foreign area translator	x				6.02(i)	1 register per foreign area translator
		x			6.02(j)	1 register for each group of foreign area translators
Marker	x		x		6.02(k)	1 register per marker
		x		x	6.02(l)	1 register per marker group
CAMA DP register	x		x		6.02(m)	1 register per incoming register group
		x		x	6.02(n)	1 register per transverter group
Transverter	x		x		6.02(o)	1 register per transverter
		x		x	6.02(p)	1 register per transverter group
Recorders	x		x		6.02(q)	1 register per AMA recorder
Incoming link frame (total sample)	x		x		6.02(r)	1 register per 15 or less incoming link frames (No. 14 or 5-wheel register type)
Link frame (sample link usage per switch)	x		x		6.02(s)	1 register per switch for each incoming and outgoing link frame
Sender link frames	x		x		6.02(t)	1 register per switch per sender link frame

**Fig. 3—Traffic Registers—4A/4M Crossbar—Associated
With TUR (Sheet 1 of 2) (1.01, 6.01)**

REGISTRATION	DESIGNATION				PAR.	PROVIDE
	CT OFFICE		ETS OFFICE			
	USAGE	MTCE	USAGE	MTCE		
Incoming and outgoing trunk groups	x		x		6.02(u)	1 register per group or subgroup as required
Tandem trunk groups	x		x		6.02(v)	1 register per trunk group
121, 131, LW operator groups, etc	x		x		6.02(w)	1 register per group
Toll completing trunk groups	x		x		6.02(x)	1 register per selected trunk group as required
CAMA position	x		x		6.02(y)	1 register per CAMA operating unit
Cycle register					6.02(z)	1 register per field of 149 TUR registers

**Fig. 3—Traffic Registers—4A/4M Crossbar—Associated
With TUR (Sheet 2 of 2) (1.01, 6.01)**