SWITCHING SYSTEMS MANAGEMENT
NO. 1 ELECTRONIC SWITCHING SYSTEM
DATA ADMINISTRATION
HOURLY MEASUREMENTS

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1. GENERAL

1.01 The network administrator is responsible for scheduling and collecting hourly traffic data. This section describes the hourly schedules and the methods used to assign and gather traffic data associated with the hourly (H and C) schedules. It will also familiarize the network administrator with the kinds of hourly measurements available.

1.02 When this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The title for each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

1.04 ***The No. 1 Electronic Switching System (ESS) Translation Guide (TG-1A) must be referred to for the most current information on traffic measurements. The TG-1A must be used for all ESS translation form preparation including traffic measurement translations.*** TG-1A, Division 3, Section 4A provides up-to-date information for the latest generic programs. Reference to the TG-1A is required for:

(1) Description of each hourly measurement

(2) ESS 1400 Form preparation

(3) ESS 1402 Form preparation.

1.05 For additional information on traffic counts, traffic counters and methods to store, schedule and printout data, refer to Dial Facilities Management Practices (DFMPs) Division H, Section 6i(1), Data Administration—General.

1.06 Input messages for the teletypewriter (TTY) channel are provided in figures at the end of this section as examples only. ***Input Message Manual IM-1A001 must be referred to for the most current information on input messages.***

1.07 Blank forms have been attached to the back of this section. They may be used as masters for reproduction purposes. These forms include:

(1) H and C schedule change list activation form

(2) Traffic register call-store word determination worksheet.

2. DESCRIPTION

H AND C SCHEDULES—GENERAL

2.01 The H and C schedules are two separate and distinct lists in the translations area of program store. Each list consists of selected traffic measurements that are assigned in translations by the network administrator using the traffic register assignment record (ESS Form 1400). The H schedule is normally used for the collection of selected measurements during the office and component busy hours. The C schedule is normally used for collecting other selected traffic measurements over longer periods and for more intervals such as the busy period for all trunking.

2.02 Measurements assigned to the H or C schedule are identified by two translation fields. They are the type measurement code field and the equipment group or office count number field.

- Type measurement codes indicates the classification of the measurement such as office counts, peg counts, usage counts, etc.

- Equipment group or office count numbers define a specific group or count within the classification. An equipment group number may identify a specific trunk group associated with a traffic count. An office count number may identify a specific office total such as originating calls.

2.03 A unique block of call store words is designated for the H schedule and another block of words for the C schedule. Every item on either schedule is associated with at least one and possible two call store words. These words are used for holding and accumulating traffic data.

2.04 The traffic registers or counters in No. 1 ESS are divided into two categories, ***standard*** for the items that are common to all control groups, and ***variable*** for the items that are unique to a given machine.

- Standard measurements are the office count types. One set is provided for each No. 1 ESS control group.

- Variable measurements are identified by the equipment group number. One or more measurements are required for each office according to the office size. For example, one set of variable measurements is required for each service circuit.

- Variable usage measurements are associated with two words in call store. All other variable measurements and all fixed measurements are associated with one word in call store. With CTX-7 and later generic programs, all traffic measurements are associated with two words in call store to permit greater flexibility of assignment.

Figure 1 lists the traffic assignments for H and C schedules available with CTX-8, Issue 4 generic program. For more current information, refer to the TG-1A.

2.05 The H and C schedule traffic data may be printed on hard copy or punched on paper tape via the network administration TTY. It may also be transmitted via data link to a central processing unit, for example, Engineering and Administrative Data Acquisition System (EADAS).

2.06 The Program for Administrative Traffic Reports On Line (PATROL) is provided for final H schedule processing for engineering and administration reports. Procedures for the management of PATROL may be found in DFMP, Division H, Section 6i(8), PATROL.

H SCHEDULE

2.07 The H schedule is normally used for collecting counts on items required for day to day administration of the central office equipment and for the engineering of general growth jobs. They include such items as:

- Office totals

- Call processing registers

- Service circuits and miscellaneous trunks

- Intraoffice trunks

- Junctors

- Networks.

2.08 The measurements that should be assigned for these groups are:

- Office totals—Usage, peg count, overflow and delay

- Call processing registers—Usage, peg count, and overflow

- Service circuits and miscellaneous trunks—Usage, peg count, overflow, and maintenance usage

- Intraoffice trunks—Usage, peg count, overflow, and maintenance usage

- Junctors—Usage

- Networks—Peg count and overflow.

2.09 One of two scan rates may be selected for traffic usage on service circuits and trunk

groups. The rates are regular scan (100 seconds) and fast scan (10 seconds).

2.10 Regular scan is recommended for items whose holding time relates to customer conversation length such as the 3-port conference trunks. The resulting traffic data is equivalent to CCS. The usage is equal to traffic usage plus maintenance usage.

2.11 Fast scan is used for items that have short holding times to provide a more accurate usage measurement. Fast scan indicates a 10-second scan measurement and must be divided by 10 to derive the equivalent CCS. ***Fast scan usage does not include maintenance usage. Items assigned to fast scan must be assigned to the first 128 registers of the H schedule, number 0000 through 0127.***

2.12 When column 33 of ESS 1400 Form is checked, it indicates a fast scan bit activated in memory. Check it for measurement code 000 ***only.***

2.13 The following items that have characteristically short holding times should be assigned to fast scan.

- Transmitters
- Receivers
- Ringing Circuits
- Tone Trunks
- Announcement Trunks
- Coin Control Circuits
- Coin Zone Groups.

2.14 Certain call processing registers are programmed for fast scan usage in the ***generic program.*** Table A lists the items and office counts which are fast scanned by the generic program. ***These office counts must not be marked as fast scan in translations.*** The fast scan column 33 on ESS 1400 Form must be left blank. A check in key punch (KP) column 33 will cause errors in traffic measurements.

2.15 Traffic registers assigned to call processing registers ***do not*** have to be assigned to the first 128 registers on the H schedule, they may be assigned to any register number.

2.16 Refer to Fig. 2 for typical fast scan entries on the ESS 1400 Form, schedule H.

2.17 Data for items assigned to fast scan are measured in 10 second intervals. Regardless as to whether the data is marked fast scan in translation or designated fast scan by the generic program, the user must divide the data by 10 to obtain the true CCS.

2.18 The H schedule has three collect, three print, and three tape perforate routines to provide maximum flexibility in scheduling. Refer to Fig. 3 for typical H schedule entries on the Traffic Measurement Schedule, ESS 1402 Form.

- Routine 02 and 13 collect and print a morning component busy hour (10:00 to 11:00 am)
- Routine 03 and 14 collect and print an afternoon component busy hour (3:30 to 4:30 pm)
- Routine 03 and 20 collect, print, and cut a paper tape for the office busy hour (7:30 to 8:30 am). This hour may also be the busy hour for many of the components. The paper tape is used for direct input to PATROL.

C SCHEDULE

2.19 The C (continuous) schedule is normally used for continuous hourly measurements. An example is gathering trunk traffic data from 9 am to 9 pm.

2.20 Data collection on the C schedule involves an hourly or half-hourly count for a continuous period of time. Consequently, only one collect and print routine is provided. Refer to Fig. 3 for typical C schedule entries on the traffic measurement schedule.

- Routine 05 and 16 collect and print continuous busy hour data from 9 am to 9 pm.

2.21 The C schedule is normally used to collect data on trunk groups. They include such items as:

- Outgoing Trunk
- Toll and Operator Trunks
- Centrex - Trunks
- Multiline Hunt Groups
- Simulated Facilities (Simulated Trunks).

A SCHEDULE (DA15)

2.22 The A schedule, available with CTX-7 and later generics, is a selected quarter-hour schedule made up of items, that ***must be included*** in either the H or C schedule. It provides traffic data at 15 minute intervals without destroying the validity of the hourly data.

2.23 The size of this group is determined by the set card SQHTC and has a maximum size of 50 items (00 through 49). Assignment is made to the A schedule using ESS 1400 Form.

2.24 The DA15 schedule should include items which may require more frequent surveillance such as:

(a) Overflows on customer digit receivers, transmitters, receivers and coin controls

(b) Overflows on final trunk groups

(c) Call processing register usage such as automatic message accounting (AMA) registers and trunk to trunk memory

(d) Any overloaded junctor group

(e) Peg counts on regular or common overflow tone.

2.25 For additional information on the A schedule or DA15, refer to DFMP, Division H, Section 6i(5), Data Administration—Quarter-Hour Measurements.

FIVE-MINUTE COLLECT

2.26 With CTX-8 and later generics, a 5-minute collect feature has been provided. The maximum number of counts that may be assigned as 5 minute collect items is 593. This feature is intended primarily for C schedule use in conjunction with network management and thus would not affect most H schedule items.

2.27 Enter a check mark for all items on the C and/or H schedules, (KP column 34) that are to be accumulated on a 5-minute basis and transmitted to EADAS facilities. The STOP entry also requires a check mark in KP column 34.

2.28 The 5-minute collect feature is not permitted for items assigned to the DA15 report. Therefore, KP column 34 must be left blank for all items assigned to the A schedule.

3. ASSIGNMENT PLANNING

REGISTER BLOCKS AND CALL STORE WORDS

3.01 The H and C schedules are two separate lists in the translation area of the program store through which two separate lists of traffic counters are assigned in call store. They consist of traffic items whose counts are to be collected according to two different time schedules. Quantities of available words are obtained from the network design order. This quantity should be verified with the parameter data assembler (PDA) printout.

3.02 The quantity of H or C list number of blocks (128 registers per block) is defined on the ESS 1500A Form, items 22 and 23.

- The quantity stated here must be large enough to provide a sufficient quantity of traffic registers for present needs and future growth.
- Once the translation is built, the amount stated in this table cannot be exceeded until the quantity is increased in the next major translation change.

3.03 The quantity of call store words are assigned to each schedule by parameter set cards. The word requirement is calculated by the engineer on the call store worksheets. Registers require one or two call store words in CTX-6 and lower

generics. All registers require two words in CTX-7 and higher generics.

3.04 Usually a minimum of 10 percent spare is provided to allow for unforeseen requirements during the design period.

3.05 The parameter set cards HSL and CSL determines the quantity of H and C call store words on their respective schedules. The network design engineer requests this quantity on the parameter run. Close coordination between the engineer and network administrator is necessary to assure that the right quantity of words is provided for the H and C schedule.

3.06 If any changes in word quantities are required, action must be taken prior to submitting final translations to the Western Electric Company in new offices, or in the case of a working office, prior to inserting recent change messages.

3.07 Failure to meet the criterion described above can result in invalid traffic data or a more serious call store service reaction (overlapping of traffic counters into another call store area).

3.08 In no case shall the number of registers assigned require more words than the available number of call store words specified for each of the H and C schedules.

Note: The total call store words provided in the network design order for H and C schedule measurements cannot be exceeded.

3.09 The network administrator is responsible for the review of the network design orders upon receipt. This should be done in order to detect shortages of call store words for traffic registers in sufficient time to have engineering changes made. Refer to Fig. 4 for information and work sheet to assist with this traffic register call store word determination.

PLANNING FOR ESS 1400 FORM ASSIGNMENTS

3.10 Before entries are made on the ESS 1400 Form, the following considerations and determinations should be made.

3.11 Spare or reserved registers should represent at least 10 percent of the total H and C schedule registers in order to provide for flexibility and growth.

3.12 All DA15 items ***must*** appear on either the H or C schedule and cannot exceed the maximum of 50.

3.13 Registers are provided in blocks of 128 in both the H and C schedules. It may be desirable to take advantage of the full 128 registers in the block. This can be achieved by assigning the spare registers as reserved. The disadvantage is the use of call store words if they are in short supply.

3.14 Use ESS 1400 Form or 1401 Form as a work sheet to plan the order of assignment. For sample entries, refer to Fig. 2, 5, and 6. Keep in mind future requirements during life of job. Also, consider network administration TTY print-out time by assigning spare registers beyond the STOP code with CTX-7 and later generics.

3.15 Determine the 5-minute collect items (EADAS) required on the H and C schedules. The DA15 schedule does not permit the 5-minute collect items.

3.16 Determine the measurements required and to which schedule they should be assigned. Some considerations are listed below:

- Items can appear on either H or C schedule, never both.
- All fast scan items except measurement code 005 must be assigned to the first 128 registers on the H schedule.
- C or H schedule counts may serve as input data to other data summary systems such as PATROL. This mechanized processing will require a determination of schedule selection and schedule layout.
- Transmitter [multifrequency (MF), dial pulse (DP), revertive pulse (RV), panel call indicator (PCI), if provided] peg count (measurement code 001), and overflow (measurement code 002) must be assigned to the H or C schedule in order to accumulate the plant measurements. These measurements are normally assigned anyhow, so this should not present a problem. For recommendations and restrictions of

other daily assignments to the H or C schedule, refer to DFMP, Division H, Section 6i(4), Data Administration—Daily Measurements.

ESS 1401 FORM PREPARATION

3.17 The ESS 1401 Form, Traffic Register Layout Record, was designed as a tool for planning traffic register assignments to the H and C schedules. It was organized in the same row arrangement as the printout and may make the planning job easier. However, the ESS 1400 Form must be prepared for translation and administration purposes. If it is also satisfactory for planning, it will eliminate the need for preparing the ESS 1401 Form.

3.18 The ESS 1401 Form is designed so that each traffic register has a rectangular space in which the pertinent details of the measured item may be included. There are spaces for 100 register assignments per page.

3.19 The format of the ESS 1401 Form is such that the sequence of assignments will be the same as those printed on the network administration TTY data printouts for the H and C schedules. The vertical row number identifies the tens digit of the register number, and the horizontal number represents the units digit of the register number.

3.20 The lower portion of each register space is divided into two segments to include the measurement code and the equipment group or office count number.

3.21 ***List Numbers:*** Enter the range of 100 register numbers per page, ie, 0000 to 0099, 0100 to 0199, 0200 to 0299, etc.

3.22 ***Schedule and Page:*** Enter the H or C for the schedule to which the ESS 1401 Form is assigned, and the page number.

3.23 Figure 6 is a sample of typical entries that may be made on the ESS 1401 Form.

4. HOURLY MEASUREMENT ASSIGNMENTS

ESS 1400 FORM ENTRIES

4.01 The ESS 1400 Form is used as an administrative record. However, it is initially used as a document to compile translation information for the hourly (H), continuous (C) and beginning with the CTX-7 program, the selected quarter-hourly (DA15) schedules. For ESS 1400 sample entries, refer to Fig. 2 and 5.

4.02 For information relating to entries common to all ESS forms (KP columns 3 through 11), refer to TG-1A, Division 1, Section 2.

4.03 ***Schedule (KP Column 19):*** Enter an H, C, or A to indicate hourly, continuous or selector quarter-hourly DA15.

4.04 ***List Number First and Second Digits (KP Columns 20 and 21):*** Traffic registers are assigned 4-digit numbers beginning with 0000 and numbered in numerical sequence for each schedule. The number of registers that may be assigned to each schedule is determined by both of the following conditions.

4.05 ***Tens and Units (KP Columns 22 and 23):*** The tens and units digit of the register numbers are preprinted. There are 100 registers per page of ESS 1400 Form.

4.06 ***Type Measurement Code (KP Columns 24 Through 26):*** The measurement code describes the type of measurement that is being made. It consists of a 3-digit code related to the traffic item listed in Fig. 7. A measurement code must be assigned to every register including those reserved for future use.

4.07 ***Equipment Group or Office Count Number (KP Columns 27 through 32):*** These six columns are used to identify the office count number, the junctor group identifier, the trunk group number (TGN) of a trunk group or service circuit group, the simulated facilities group number (SFGN) of a simulated facilities group, the centrex group number (CTXN) and console group number (CGN) of centrex group counts, the multiline hunt group number, or the number identifying the network being measured.

- Figure 1 identifies the measurement codes and associated equipment group and office count number.
- A description of each measurement listed in office count order may be found in TG-1A, Division 3, Section 4A.

- Recommendations and restrictions of daily counts that may be assigned to the H or C schedule may be found in DFMP, Division H, Section 6i(4).

4.08 ***Fast Scan (KP Column 33):*** Enter a check mark for all items that require fast scan treatment. Refer to the fast scan description in Part 2.

4.09 ***Five-Minute Collect (KP Column 34):*** Refer to the 5-minute collect description in Part 2.

4.10 ***Two-Word Item:*** This column has been included as an administrative item to account for call store words.

- With CTX-6 and lower generics, the following measurement codes are 2-word items: 000, 006, 007, 008, 010, 018, 024, 027, and 050. All other measurement codes are one-word items.

- With CTX-7 and higher generics, the 2-word column is not required because all measurements are 2-word items.

TRANSLATION UPDATE

4.11 Prior to cutover, the initial translation ESS 1400 Form is included in the complete translation package sent to Western Electric Company for processing. The procedures for preparing this form are fully covered in the TG-1A.

4.12 After the processing is finalized and in working offices, all ESS 1400 Form updates and associated translation changes must be done onsite via recent change messages. Close coordination between network maintenance and network administration is required.

4.13 Listed below are examples of types of changes requiring updates to the ESS 1400 Form.

- Equipment additions

- Generic or parameter updates

  Example: New feature measurements

- Centrex cutovers

- Trunk group additions or deletions.

4.14 The ESS 1400 Form may be used as an update document. To do so, forward a copy with the changes noted, to network maintenance for inclusion in recent change and subsequent card write.

VERIFICATION OF HOURLY MEASUREMENT TRANSLATIONS

4.15 The translations for the H and C schedules must be verified to ensure that the traffic measurements are correct in program store. Failure to do this will jeopardize the validity of the traffic data. It is recommended that the verifications be performed as follows:

(1) Verify all the H and C schedule measurements with the ESS translation prior to the initial cutover of an office and prior to the start of each busy season thereafter. Resolve any discrepancy. This will provide a 100 percent translation verification each year.

(2) Verify any H or C schedule individual measurement updates made throughout the year. Resolve any discrepancy. This will ensure that the translations remain correct throughout the year.

4.16 Two verification methods are described below for CTX-7 or lower generic programs.

(1) Request network maintenance to T-READ the specific H or C block data affected. This method requires an interpretation of the resultant octal printout. For additional information, refer to the Output Message Manual OM-1A001 and translations output configuration PA-591003, for No. 1 ESS and OM-6A001, PA-6A002 for No. 1A ESS.

(2) By use of the VFY-PSWD-28 message at the network administration TTY. This message is used to request the system to verify a program store address. When using this message, the network administrator must know the octal address of the register assignment to be read. This method is slow when there are many assignments to be checked. This method also requires an interpretation of the resultant octal printout. For additional information, use references in the previous paragraph.

4.17 With CTX-8 and later generic programs an improved verification procedure has been implemented. This method enables verification of traffic register assignments via the TRF-VFY-TTY input message to list (LIST) a range of registers, search (SCH) for a unique assignment, or abort (ABRT) the previous request.

- LIST request will produce a TC17 reply message.
- SRCH request will produce a TC18 reply message.
- ABRT message will respond OK.
- Examples of these messages are shown in Fig. 8. For additional details, refer to Input Manual, IM-1A001 and Output Manual, OM-1A001 for No. 1 ESS and IM-6A001, OM-6A001 for No. 1A ESS.
- The data printout will closely resemble the ESS 1400 Form. It should be noted, however, that verification of ***STOP*** is designated as TMC 127 on the input and output messages.
- It is recommended that these TTY messages be performed via the network administration channel.

VALIDATION TESTS OF TRAFFIC DATA

4.18 Validation of traffic measurements is required in the No. 1 ESS as in other types of switching systems. The network administrator is specifically responsible for data validation prior to providing the data to a user. The following paragraphs contain validation tests that may be applied to the data.

4.19 The "eye ball" approach is one method which may be employed in validating data to determine if measurements (peg counts, overflow, and usage) for given components are reasonable.

4.20 Using expected upper and lower range checks is also effective. With this method the ranges of peg count or usage, taken from previous data studies, are compared to the range limits of collected data. The data is satisfactory if it falls within this range.

4.21 Applying range checks to holding times (usage divided by peg count equals holding time). An error in a usage count or a peg count will usually result in the computation of an unreasonable holding time. Erroneous measurements can often be detected by comparing measured usage or peg count to those estimated in the network design order. The network administrator may wish to consult with the network design engineer to determine a reasonable holding time for the office. Reasonable ranges for working offices may also be determined by using the rules and formulas for standard deviation. Such equipment components as customer digit receivers, transmitters, interoffice receivers, etc, as well as trunk groups are validated in this manner.

4.22 For service circuit and call processing register usage, the usage must be less than 36 times the number of circuits installed.

4.23 Under normal conditions, the dial tone speed tests should equal 900 for a given hour. Exception: The tests may be less than 900 if a large portion of lines are unassigned.

4.24 For any given circuit, the overflow count should not exceed the peg count.

4.25 When a cycle count register is provided on a schedule, it should record 36 in a given hour.

4.26 Holding times for each of the ***audible*** ringing phases should be approximately equal.

4.27 Holding times for each of the ***regular*** ringing phases should be approximately equal.

4.28 Trunk or service circuit group usage counts can at times be deflated or inflated by a system trouble. Such a condition could go undetected for a long period of time due to the manner in which usage counts are collected. Up-down counters are used to reflect the actual number of busy "servers" in a specific group. When the results of each periodic scan of an up-down counter are added for one hour, "CCSs" or "CCSs times ten" are obtained. It sometimes happens that an up-down counter is incremented (say once) in error thus reflecting the actual number of busies plus one. Each periodic scan will reflect one CCS (assuming regular scan) or 36 CCS for an hour in addition to

the actual usage. Such an error is usually recurring and can possibly result in occupancies greater than 36 CCS per trunk. A printout of the hourly schedules during the lowest traffic period (Example: 3 am) may be used in detecting inflated counters.

(1) An input message is available from the maintenance TTY that will set the up-down counter of a specific trunk group or service circuit group to zero, should a usage count look unreasonably high. The input message to be used is TC-ZTKU-aaa. Subsequent usage count for that trunk group will be deflated until an all trunks idle condition normalizes the counts. (This does not zero the maintenance usage register.)

Note: Trunk and service circuit group data may be understated for a period of time if all circuits are not idle when the counters are zeroed. This condition will prevail on a group until an all idle condition is experienced.

(2) Another message TC-ZERO (from the maintenance TTY) will set ***all*** trunk and service circuit group up-down counters to zero. This message should be used prior to cutover and can be used after cutover during periods of very light traffic. ***TC-ZERO should never be used during heavy traffic periods as it will cause traffic processing to stop momentarily.***

4.29 Comparisons of related measurements may be helpful in identifying traffic data problems. Refer to Table B for some examples.

4.30 PATROL contains most of the checks mentioned here and many others. Refer to the PATROL user's lessons for more information on data validation tests.

4.31 Recurring discrepancies which cannot be related to a translation error and are thought to be caused by a generic program bug, should be reported as an operational trouble report (OTR) to the Western Electric Company. Failure reports are assigned to cover generic program problems relating to circuits, parameters or translations. After measurement-oriented inquiries have been received, a failure report number is assigned if appropriate. The TG-1A carries ***only those failure reports relating to traffic measurements*** and is not intended to replace the total profile listing. Each new generic program or point issue reflects the inclusion of particular failure reports, as covered in the generic program documentation supplied with each change. Inasfar as possible, TG-1A, Division 3, Section 4, will be kept up-to-date with failure report activity.

5. HOURLY PRINTOUTS

5.01 The H and C block is printed with ten measurements per row. The rows printed will depend on the length of the schedule. Refer to Fig. 9 for an example of an output message format.

5.02 Some method must be used to determine the measurement list number. One method is the use of a guide numbered 0 through 9 to line up with the ten numbers on a row of the H or C block printout. Refer to Fig. 9 for an example of the use of the guide.

6. H AND C SCHEDULE CHANGE LIST

6.01 At times, a usage, overflow, or peg count study may be required on a trunk group or service circuit group that is not assigned to either H or C schedule. Normally, this requires converting a reserved register via recent change message, which does not become effective until the program store is updated. If such a study is urgent, a message is available from the network administration or maintenance TTY that will substitute the TGN to be measured for one presently assigned on the H or C schedule. This message becomes effective at the start of the next H or C collection period.

6.02 The H and C schedule change list activation form is used to record the current status of the substitute list.

6.03 There are eight call store registers available for substituting or deleting on the H schedule, numbered 00 through 07, and eight registers for substituting or deleting on the C schedule, numbered 08 through 15.

6.04 Fast scan (10-second scan) and slow scan (100-second scan) usage items may be interchanged. Trunk groups from the C schedule may be substituted on the H schedule and H schedule to the C schedule with the appropriate messages from the network administration TTY.

6.05 The general form of the message required to accomplish this is:

TC-CHANGE-a,bbb,ccc,dd.

a = Type Measurement, 0 - usage, 1 - peg count, 2 - overflow.

bbb = TGN to be substituted for a TGN in the H or C schedule.

ccc = TGN for which bbb is to be substituted.

dd = Position in substitute list; 00 through 07 for H schedule, 08 through 15 for C schedule.

Example: To substitute TGN 324 peg count on the H schedule for TGN 127 peg count on the C schedule:

TC-CHANGE-1,324,127,08.

To cancel the above substitution:

TC-CHANGE-1,000,000,08.

Typical Substitutions

6.06 For a working TGN that is not assigned on ESS 1400 Form, substitute on the C schedule a working TGN, peg count (PC), overflow and usage. Substitute TGN 012 for 123.

- ***Activate:***

  Usage: TC-CHANGE-0,012,123,08.

  PC: TC-CHANGE-1,012,123,09.

  Overflow: TC-CHANGE-2,012,123,10.

- ***Deactivate:***

  Usage: TC-CHANGE-0,000,000,08.

  PC: TC-CHANGE-0,000,000,09.

  Overflow: TC-CHANGE-0,000,000,10.

The deactivate message will cause the original TGN to again be associated with its H or C schedule register as assigned on the ESS 1400 Form.

6.07 Interchange a TGN on the C schedule with a TGN on the H schedule, peg count, overflow, and usage TGN on H schedule 014 TGN on C schedule 132.

- ***Activate C Schedule on TGN 132:***

  Usage: TC-CHANGE-0,014,132,08.

  PC: TC-CHANGE-1,014,132,09.

  Overflow: TC-CHANGE-22,014,132,10.

- ***Activate H Schedule on TGN 014:***

  Usage: TC-CHANGE-0,132,014,00.

  PC: TC-CHANGE-1,132,014,01.

  Overflow: TC-CHANGE-2,132,014,02.

- ***Return H Schedule TGN 014 to Normal:***

  Usage: TC-CHANGE-0,000,000,08.

  PC: TC-CHANGE-0,00,000,09.

  Overflow: TC-CHANGE-0,000,000,10.

- ***Return C Schedule TGN 132 to Normal:***

  Usage: TC-CHANGE-0,000,000,00.

  PC: TC-CHANGE-0,000,000,01.

  Overflow: TC-CHANGE-0,000,000,02.

6.08 Change messages should not be activated during a collection period.

6.09 Refer to Fig. 10 for typical entries on the H and C schedule change list activation form.

7. ASSIGNING H AND C SCHEDULES FOR CONTINUOUS STUDY HOURS

7.01 Sometimes it is desirable to schedule the H and/or C schedule for continuous study hours such as total day or partial day collection. Scheduling is assigned on the ESS 1402 Form.

Note: A scheduling strategy is required to avoid a conflict with other data collections.

7.02 An example of total day collection may be a 24-hour count of a given trunk group for a division of revenue study.

- Refer to Fig. 11. The total day count was arbitrarily assigned to the C schedule. There will be one printout at 2:30 am. It will contain a cumulative count from 2:30 am one day to 2:30 am the next day.

7.03 An example of partial day collection may involve a 9 am to 5 pm study for a business customer.

- Refer to Fig. 11. The partial day count was arbitrarily assigned to the H schedule. There will be one printout at 5 pm. It will contain a cumulative count from 9 am to 5 pm each day.

8. ENGINEERING AND ADMINISTRATIVE DATA ACQUISITION SYSTEM (EADAS) H AND C SCHEDULE ASSIGNMENT CONSIDERATIONS

8.01 EADAS collects traffic data from a number of central offices, transmits exception reports back to the network administration site and prepares magnetic tapes for downstream processing. A practical example of the use of EADAS is the batch processing of PATROL.

8.02 For a more detailed description of PATROL batch data entry, refer to DFMP, Division H, Section 6i(9), TNDS—PATROL.

8.03 When EADAS is used to collect traffic data, there are three basic assignment considerations.

(1) Decade scale register assignments

(2) Cycle count register assignment

(3) Coordination of the ESS traffic map with EADAS for CTX-7 and lower generics.

DECADE SCALE REGISTER ASSIGNMENTS

8.04 The maximum register value handled by EADAS is 65,535. Measurements that may exceed this count should be assigned to registers 126 through 149. EADAS automatically decade scales (divides by ten) these registers (prior to CTX-8, Issue 3). PATROL will scale up these counts before performing any calculations with the data. Any low count measurements (eg, overflow registers) should be assigned elsewhere to preclude significant scaling errors in these measurements.

CYCLE COUNT REGISTER ASSIGNMENT

8.05 Register 0000 must be established as a cycle count register for ***all*** No. 1 ESS generics that are processing data through Traffic Data Administration System (TDAS) (H and C schedules). TDAS requires a cycle count register to determine the interval length of the data.

8.06 No. 1 ESS offices that are associated with a non-EADAS need not establish a cycle count register if the following conditions are met.

(a) The data acquisition system can determine the collection interval length and fill in the proper length code in the header information for each H schedule on the magnetic tape.

(b) The data is not sent through TDAS. In this case, PATROL will use the length code in the header information to determine the collection interval length for the data.

8.07 The cycle count register is established as follows:

(a) Establish an incoming trunk group containing one trunk.

(b) Arrange the trunk to be permanently busy. This is done by wiring tip to ring at the terminal strip on the universal trunk frame or at the trunk equipment appearance on the main distributing frame, thereby driving the trunk to the high and wet list.

Note: A trunk make busy condition from the maintenance TTY, placing the trunk on the trunk out-of-service list, is not recommended.

(c) Assign register 0000 as regular scan usage for the trunk group. This is measurement code 000. Do ***not*** mark it fast scan.

Note: If this register is presently a one-word item, it must be changed to a two-word item first.

(d) It is recommended that the network administrator negotiate appropriate safeguards against inadvertent loss of the cycle count register. (Appropriate trunk record notation and tagging of the short circuit cross connection can reduce the chance of erroneously removing the trunk from the high and wet list.)

(e) Register 0000 of the C block must be similarily arranged as a pseudo cycle count register. This should be done if it is planned to process C blocks in TDAS for input to the downstream trunking programs.

Traffic Register Change From One Word to Two Words

8.08 If register 0000 is presently a one-word register and the office is equipped with CTX-6 or earlier generics, changes to convert register 0000 to two words must be completed first.

8.09 A procedure for interchanging a one-word and a two-word register has been developed and tested by Bell Telephone Laboratories. It is done with a change program store word (CHPSWD) recent change messages. The procedures are as follows:

(a) Assume that register 0000 is presently a one-word register and that it is to be changed to a usage register assigned to incoming trunk group XXX for pseudo cycle count. The traffic measurement presently assigned to register 0000 must be moved to a spare register. If the spare that is selected is a one-word register, then another spare two-word register must be converted to a spare one-word register to keep the total word count unchanged.

(b) Extreme care should be used to determine the program store addresses of traffic registers which are to be changed. The present assignment data should be verified. The change list (ie, substitute trunk group list) should be checked by T-READ to eliminate any substitutions that may have been left in translations and would interfere with the planned register rearrangements.

(c) The new assignment data for each register is then placed in recent change using the CHPSWD message (or RC:PSWD in CTX-6). For offices with CTX-5 and earlier generics, card writing is necessary for the changed assignments to become effective. In CTX-6 the card writing step is not required. The next scheduled collection will cause the associated traffic register words in call store to be reconfigured into one- and two-word registers in accordance with the revised assignment translations in program store.

(d) It is recommended that the register assignment changes be made outside of the normal busy periods. All data which are accumulated after the last collection preceding the input of the register change messages will be invalid until another collection is made. It is advisable, therefore, to have a collection shortly after the register changes become effective. This may require scheduling an extra collection and then removing it from the traffic map after the collection has occurred. Standard TC-TIME input messages are used for this procedure.

COORDINATION OF TRAFFIC MAP WITH EADAS

8.10 Prior to CTX-8, Issue 3, the data collection interval is always determined by the network map. Any changes in the network map requires advanced notification to EADAS personnel. Close coordination with the EADAS administrator is essential. Any changes to the traffic map without previous EADAS updating will cause data loss.

8.11 For more details, refer to DFMP, Division H, Section 6i(9).

9. ABBREVIATIONS AND ACRONYMS

ABBREVIATIONS	TITLE
AMA	Automatic Message Accounting
ANI	Automatic Number Identification
CAMA	Centralized Automatic Message Accounting
CCS	Hundred Call Second
CGN	Console Group Number
CHPSWD	Change Program Store Word
CTXN	Centrex Group Number
DFMP	Dial Facilities Management Practice

DP	Dial Pulse
EADAS	Engineering and Administration Data Acquisition System
ESS	Electronic Switching System
KP	Key Punch
MF	Multifrequency
OTR	Operational Trouble Report
ONI	Operator Number Identification
PATROL	Program for Administrative Traffic Reports On Line
PC	Peg Count
PCI	Panel Call Indicator
PDA	Parameter Data Assembler
POTS	Plain Old Telephone Service
RV	Revertive Pulse
SFGN	Simulated Facilities Group Number
TDA	Traffic Data Assembler
TDAS	Traffic Data Administration System
TGN	Trunk Group Number
TOS	Trunk Out of Service
TTY	Teletypewriter
UT	Universal Trunk

CONTENTS

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
1. NETWORK				
LLN Incoming Calls	PC	011	LLN #	1/LLN
LLN Incoming Calls	OVFL	012	LLN #	1/LLN
TLN Incoming Calls	PC	013	TLN #	1/TLN
TLN Incoming Calls	OVFL	014	TLN #	1/TLN
2. OFFICE TOTALS				
Originating Calls	PC	005	014	1
Incoming Calls	PC	005	015	1
Incoming Matching Loss	OVFL	005	016	1
DP Dial Tone Speed Tests	PC	005	017	1
TT Dial Tone Speed Tests	PC	005	018	1
DP Dial Tone Speed Delays	PC	005	019	1
TT Dial Tone Speed Delays	PC	005	020	1
Partial Dial — Abandon	PC	005	021	1
Partial Dial — Timed Out	PC	005	022	1
False Starts	PC	005	023	1
Line Busy — Incoming	PC	005	028	1
Line Busy — Intraoffice	PC	005	029	1
Reverting Calls	PC	005	030	1
Intraoffice Calls	PC	005	031	1
Intraoffice Calls	OVFL	005	032	1
Outgoing Calls	OVFL	005	033	1
Total Line Link Network "A" Link	USAGE	005	116	1
Main Program Cycles — E-to E	PC	005	126	1
Line Scan Completion	PC	005	127	1
Tandem Call Attempts	PC	005	131	1
Tandem Call Attempts	OVFL	005	132	1
IDDD Calls	PC	005	146	1

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 2 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Incoming Overload Control Queue	PC	005	148	1
Incoming Overload Control Queue	USAGE	005	150	1
DID Calls to Unequipped CTXN Translator	PC	005	155	1
Originating-Outgoing Calls Failure Due to all Trunks Busy	PC	005	162	1
MF Transmitter Timeouts	PC	005	165	1
DP Transmitter Timeouts	PC	005	168	1
RP Transmitter Timeouts	PC	005	171	1
PCI Transmitter Timeouts	PC	005	174	1
AQTL Queue Abandons	PC	005	192	1
Coin Overtime Operator Routed	PC	005	194	1
Tandem First Failure to Match	PC	005	202	1
Incoming First Failure to Match	PC	005	205	1
Tandem Calls Failure Due to Outgoing Trunk (OGT) Busy	PC	005	208	1
MF Receiver Attachment Delay Recorder (RADR) Tests	PC	005	217	1
MF Receiver Attachment Delay Recorder (RADR) Delays	PC	005	220	1
DP Receiver Attachment Delay Recorder (RADR) Tests	PC	005	223	1
DP Receiver Attachment Delay Recorder (RADR) Delays	PC	005	226	1
RP Receiver Attachment Delay Recorder (RADR) Tests	PC	005	229	1
RP Receiver Attachment Delay Recorder (RADR) Delays	PC	005	232	1

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 3 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Preprogram Controls Affected Calls	PC	005	233	1
Flexible Controls	PC	005	234	1
Code Block/Calling Line Identification (CLID) Affected Calls		005	236	1
HILO Incoming Calls	OVFL	005	271	1
HILO CAMA — Misrouted CAMA Treatment	PC	005	272	1
HILO Incoming Calls	PC	005	286	1
HILO Tandem Call Attempts	PC	005	289	1
HILO Incoming Calls First Failure to Match	PC	005	292	1
HILO RADR — MF Tests	PC	005	295	1
HILO RADR — MF Tests Failures	PC	005	298	1
HILO RADR — DP Tests	PC	005	301	1
HILO RADR — DP Test Failures	PC	005	304	1
HILO Tandem Call Failures Due to all Outgoing Trunks Busy	PC	005	307	1
HILO MF Transmitter Timeouts	PC	005	310	1
HILO DP Transmitter Timeouts	PC	005	315	1

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 4 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
3. CALL PROCESSING REGISTERS				
Trunk-to-Trunk Memory	PC	005	034	1
Trunk-to-Trunk Memory	USAGE	005	049	1
Trunk-to-Trunk Memory	OVFL	005	035	1
13 Word AMA Register	PC	005	147	1
13 Word AMA Register	USAGE	005	053	1
13 Word AMA Register	OVFL	005	195	1
9 Word AMA Register	PC	005	196	1
9 Word AMA Register	USAGE	005	198	1
9 Word AMA Register	OVFL	005	199	1
AMA Annex Register	USAGE	005	145	1
Call Forwarding Register	USAGE	005	039	1
Disconnect Register	USAGE	005	041	1
Operator Trunk Register	USAGE	005	043	1
Timed Scan Register	USAGE	005	045	1
Peripheral Order Buffer	USAGE	005	047	1
Coin Charging Register	USAGE	005	055	1
Conference Assistance Register (Path Memory Annex 6)	USAGE	005	111	1
Hotel-Motel Register	USAGE	005	112	1
Originating Coin Zone Register	USAGE	005	112	1
Trunk Flash Timing Register	USAGE	005	121	1
Reverting Call Register	USAGE	005	123	1

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 5 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Bylink Dialing Senior Register	USAGE	005	129	1
Bylink Dialing Junior Register	USAGE	005	135	1
Hit Timing Junior Register	USAGE	005	137	1
CAMA ANI and ONI Port 0 Register	USAGE	005	152	1
Fast Answer Junior Register	USAGE	005	264	1
Fast Answer Junior Register	PC	005	265	1
Fast Answer Junior Register	OVFL	005	266	1
Fast Answer Senior Register	USAGE	005	268	1
Fast Answer Senior Register	PC	005	269	1
Fast Answer Senior Register	OVFL	005	270	1
4. CUSTOMER CALLING SERVICES				
Activate Call Forwarding	PC	005	024	1
Number of Calls Forwarded	PC	005	026	1
Call Forwarding Recent Change	USAGE	005	051	1
Centrex Transfer Individual	PC	005	130	1
Call Waiting	PC	005	133	1
Speed Call List Change Attempts — POTS	PC	005	238	1
Speed Call List Change Attempts — CTX	PC	005	241	1
5. CAMA SERVICES				
Position Occupied	USAGE	005	154	1
CAMA Operator Positions Available	USAGE	005	157	1
CAMA Operator Calls Handled	PC	005	179	1
ONI PC	PC	005	180	1
ANI Timeout	PC	005	181	1
ANI Failure	PC	005	182	1
Position Disconnect	PC	005	183	1

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 6 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
CAMA Queue	PC	005	184	1
CAMA Queue	USAGE	005	186	1
CAMA Queue	OVFL	005	187	1
Match Check Failure	PC	005	188	1
Wrong Calling Code	PC	005	189	1
Misrouted CAMA Treatment	PC	005	190	1
CAMA Queue Abandoned	PC	005	191	1
6. COIN ZONE				
Coin Zone Overtime	PC	005	036	1
Coin Overtime Announcement	PC	005	193	1
Coin Attempt By Initial Charge Condition	PC	047	Coin Zone Initial Charge Condition	1/Charge Condition
7. JUNCTOR GROUPS				
Line-to-Line	USAGE	008	Junctor Group #	1/GRP
Line-to-Trunk	USAGE	008	Junctor Group #	1/GRP
Trunk-to-Trunk	USAGE	008	Junctor Group #	1/GRP
8. TRUNK GROUPS				
Intraoffice	USAGE	000	TG #	1/GRP
One-Way Outgoing	USAGE	000	TG #	1/GRP
One-Way Incoming	USAGE	000	TG #	1/GRP
Two-Way (Incoming and Outgoing)	USAGE	000	TG #	1/GRP
One-Way Outgoing Tie	USAGE	000	TG #	1/GRP
One-Way Incoming Tie	USAGE	000	TG #	1/GRP
Two-Way (Incoming and Outgoing) Tie	USAGE	000	TG #	1/GRP
Outgoing Foreign Exchange (FX)	USAGE	000	TG #	1/GRP
Incoming FX	USAGE	000	TG #	1/GRP
Intraoffice	PC	001	TG #	1/GRP

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 7 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
One-Way Outgoing	PC	001	TG #	1/GRP
One-Way Incoming	PC	001	TG #	1/GRP
One-Way Outgoing Tie	PC	001	TG #	1/GRP
One-Way Incoming Tie	PC	001	TG #	1/GRP
One-Way Outgoing FX	PC	001	TG #	1/GRP
One-Way Incoming FX	PC	001	TG #	1/GRP
Trunk Group — Other	PC	001	TG #	1/GRP
Intraoffice	OVFL	002	TG #	1/GRP
One-Way Outgoing	OVFL	002	TG #	1/GRP
Outgoing on Two-Way	OVFL	002	TG #	1/GRP
One-Way Outgoing Tie	OVFL	002	TG #	1/GRP
Outgoing on Two-Way Tie	OVFL	002	TG #	1/GRP
Outgoing FX	OVFL	002	TG #	1/GRP
Outgoing on Two-Way FX	OVFL	002	TG #	1/GRP
Trunk Group — Other	OVFL	002	TG #	1/GRP
Incoming on Two-Way	PC	003	TG #	1/GRP
Incoming on Two-Way Tie	PC	003	TG #	1/GRP
Incoming on Two-Way FX	PC	003	TG #	1/GRP
Trunk Group — Other	PC	003	TG #	1/GRP
Outgoing on Two-Way	PC	004	TG #	1/GRP
Outgoing on Two-Way Tie	PC	004	TG #	1/GRP
Outgoing on Two-Way FX	PC	004	TG #	1/GRP
Trunk Group — Other	PC	004	TG #	1/GRP
Trunk Group — Other	MTCE	006	TG #	1/GRP
Outgoing Thru-Switched	PC	023	TG #	1/GRP
Incoming Thru-Switched	PC	023	TG #	1/GRP
9. SIMULATED FACILITIES GROUPS (SFG)				
One-Way SFG	USAGE	027	SFG #	1/SFG
Two-Way SFG	USAGE	027	SFG #	1/SFG
One-Way SFG	PC	028	SFG #	1/SFG
Two-Way SFG Outgoing	PC	029	SFG #	1/SFG

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 8 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Two-Way SFG Incoming	PC	030	SFG #	1/SFG
One-Way SFG	OVFL	031	SFG #	1/SFG
Two-Way SFG Outgoing	OVFL	031	SFG #	1/SFG
10. MULTILINE HUNTING GROUPS (MLHG)				
Multiline Hunting Group	PC	016	MLHG #	1/MLHG
Multiline Hunting Group	OVFL	017	MLHG #	1/MLHG
Multiline Hunting Group	USAGE	018	MLHG #	1/MLHG
11. QUEUING OF TRUNKS AND LINES (QTL)				
Queuing of Trunks and Lines	PC	048	QTL GRP #	1/QTL GRP
Queuing of Trunks and Lines	OVFL	049	QTL GRP #	1/QTL GRP
Queuing of Trunks and Lines	USAGE	050	QTL GRP #	1/QTL GRP
12. SERVICE AND MISCELLANEOUS CIRCUITS				
Customer Dial Pulse Receiver	USAGE	000	TG #	1
Customer TOUCH-TONE® Receiver (Ovfl Grp)	USAGE	000	TG #	1
Customer TOUCH-TONE Receiver	USAGE	000	TG #	1
MF Receiver	USAGE	000	TG #	1
MF Receiver — Service Link Network	USAGE	000	TG #	1
RP Receiver	USAGE	000	TG #	1
RP Receiver — Service Link Network	USAGE	000	TG #	1
DP Receiver	USAGE	000	TG #	1
DP Receiver — Service Link Network	USAGE	000	TG #	1
MF Transmitter	USAGE	000	TG #	1
RP Transmitter	USAGE	000	TG #	1
DP Transmitter	USAGE	000	TG #	1
PCI Transmitter	USAGE	000	TG #	1

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 9 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Power (Regular) Ring — 3 Phases	USAGE	000	TG #	3
Audible Ring — 3 Phases	USAGE	000	TG #	3
Power (Regular) and Audible Ring — 3 Phases Service Link Network	USAGE	000	TG #	3
Special Ring	USAGE	000	TG #	1
Busy Tone	USAGE	000	TG #	1
Regular Overflow Tone	USAGE	000	TG #	1
Common Overflow Tone	USAGE	000	TG #	1
Coin Control	USAGE	000	TG #	1
Local Overtime Collect	USAGE	000	TG #	1
Coin Zone (Initial and Overtime)	USAGE	000	TG #	4 Max.
Announcement	USAGE	000	TG #	1/GRP
Intercept	USAGE	000	TG #	1/GRP
Multiport Conference Circuit	USAGE	000	TG #	1/GRP
Attendant Loop	USAGE	000	TG #	1/GRP
Continuity and Polarity Test	USAGE	000	TG #	1/GRP
Station Ringer Test	USAGE	000	TG #	1/GRP
(For any Circuit Above)	PC	001	TG #	(Same as above)
(For any Circuit Above)	OVFL	002	TG #	(Same as above)
(For any Circuit Above)	MTCE	006	TG #	(Same as above)
13. CENTREX				
Centrex Attendant	USAGE	007	Console Group #	1/CONS GRP
Centrex Originating Call	PC	019	CTXN #	1/CTXN
Centrex Incoming Call to LDN	PC	020	CTXN #	1/CTXN
Centrex Extension Dial "0" (Attend.)	PC	021	CTXN #	1/CTXN
Centrex Calls Transferred	PC	022	CTXN #	1/CTXN
Centrex Attendant Queue	USAGE	024	CTXN #	1/CTXN
Centrex Attendant Queue	PC	025	CTXN #	1/CTXN
Centrex Attendant Queue	OVFL	026	CTXN #	1/CTXN

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 10 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Centrex Routing AUTOVON Calls	PC	032	CTXN #	1/CTXN
Centrex Routine AUTO-VON Calls	OVFL	033	CTXN #	1/CTXN
Centrex Priority AUTO-VON Calls	PC	034	CTXN #	1/CTXN
Centrex AUTOVON Pre-emptions Exercised	PC	035	CTXN #	1/CTXN
Centrex AUTOVON Pre-emptions Failed	PC	036	CTXN #	1/CTXN
Centrex Calls Forwarded Busy Line	PC	037	CTXN #	1/CTXN
Centrex Calls Forwarded Don't Answer	PC	038	CTXN #	1/CTXN
Centrex Calls Forwarded Regular (Variable)	PC	039	CTXN #	1/CTXN
Centrex Calls — Call Hold	PC	040	CTXN #	1/CTXN
Centrex Call Forward Activations	PC	041	CTXN #	1/CTXN
Centrex Call — Pickup	PC	042	CTXN #	1/CTXN
Centrex Calling Intragroup	PC	043	CTXN #	1/CTXN
Centrex DID Calls	PC	044	CTXN #	1/CTXN
Centrex Dial "8" Calls	PC	045	CTXN #	1/CTXN
Centrex Dial "9" Calls	PC	046	CTXN #	1/CTXN
Centrex Directed Call Pickup	PC	052	CTXN #	1/CTXN
14. NETWORK MANAGEMENT				
Preprogram Number	PC	051	PreProg # (PP)	1/PP
15. TRAFFIC LINE GROUP				
Traffic Line Group	PC	057	LNGRP #	1/GRP
Traffic Line Group	OVFL	058	LNGRP #	1/GRP
16. AUTOMATIC CALL DISTRIBUTION				
Agent Originating	PC	059	Data Group (DAG) #, SPLIT #	1/SPLIT

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 11 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	BASIS FOR PROVISIONS
Calls Transferred to Agent	PC	060	DAG #, SPLIT #	1/SPLIT
Calls Transferred by Agent	PC	061	DAG #, SPLIT #	1/SPLIT
Positions Busy	USAGE	062	DAG #, SPLIT #	1/SPLIT
Positions Manned	USAGE	063	DAG #, SPLIT #	1/SPLIT
Agents Idle and Available	USAGE	064	DAG #, SPLIT #	1/SPLIT
Agents on Incoming Calls	USAGE	065	DAG #, SPLIT #	1/SPLIT
Agents on Outgoing Calls	USAGE	066	DAG #, SPLIT #	1/SPLIT
After Call Work	USAGE	067	DAG #, SPLIT #	1/SPLIT
Positions Out of Service	USAGE	068	DAG #	1/DAG
Agents Originating	PC	069	DAG #, Reporting Group (RG) #	1/R.G.
Calls Transferred to Agent	PC	070	DAG #, RG #	1/R.G.
Calls Transferred by Agent	PC	071	DAG #, RG #	1/R.G.
Positions Busy	USAGE	072	DAG #, RG #	1/R.G.
Positions Manned	USAGE	073	DAG #, RG #	1/R.G.
Agents Idle and Available	USAGE	074	DAG #, RG #	1/R.G.
Agents on Incoming Calls	USAGE	075	DAG #, RG #	1/R.G.
Agents on Outgoing Calls	USAGE	076	DAG #, RG #	1/R.G.
After Call Work	USAGE	077	DAG #, RG #	1/R.G.
Calls Abandoned from Queue	PC	078	QTL #	1/QTL
Calls Answered in Greater Than "X", Seconds	PC	079	QTL #	1/QTL
Calls Answered in Less Than or Equal to "X" Seconds	PC	080	QTL #	1/QTL
Traffic Service Index	—	081	QTL #	1/QTL
Intraflow Into Queue	PC	082	QTL #	1/QTL
Intraflow Out of Queue	PC	083	QTL #	1/QTL
Calls Offered to Queue	PC	084	QTL #	1/QTL
17. RESERVED OR SPARE				
One-Word Item	PC	009	- - - -	1/Item
One-Word Item	OVFL	009	- - - -	1/Item
Two-Word Item	USAGE	010	- - - -	1/Item

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 12 of 13) (2.04, 4.07)

ITEM MEASURED	MEASUREMENT TYPE	MEASUREMENT CODE		EQUIPMENT GROUP OR OFFICE COUNT NUMBER
18. DAILY MEASUREMENTS				
Links Maintenance Busy	—	005		063
Originating Toll (AMA)	USAGE	005		065
Permanent Signal	PC	005		072
Three-way Calling	PC	005		073
Speed Calling (1 Digit)	PC	005		074
Speed Calling (2 Digit)	PC	005		075
Originating Toll Attempts	PC	005		076
Disconnect Hits	PC	005		077
Blocked Dial Tone Queue	PC	005		078
MF Transmitter Timeout	PC	005	*	165
DP Transmitter Timeout	PC	005	*	168
RP Transmitter Timeout	PC	005	*	171
PCI Transmitter Timeout	PC	005	*	174
Intercept — Temporary Disconnect	PC	005		083
Intercept — Changed Number	PC	005		084
Intercept — Unassigned Number	PC	005		085
Intercept — Blank Number	PC	005		086
Dial Tone Blockage	PC	005		087
Trouble Intercept	PC	005		088
Dial Conference Attempts	PC	005		089
Speed Calling (POTS)	PC	005	*	238
Speed Calling (Centrex)	PC	005	*	241
General Purpose	PC	015		

* Available with CTX-7 and later generic programs.

Note: For recommendations and restrictions for assigning daily measurements to the H or C schedules, refer to DFMP, Division H, Section 6i (4), Data Administration — Daily Measurements.

Fig. 1—List of Traffic Measurements for H and C Schedules (CTX-8, Issue 4) (Sheet 13 of 13) (2.04, 4.07)

ESS 1400 (04) TG-1A

TRAFFIC REGISTER ASSIGNMENT RECORD

NO 1 ESS 2 WIRE

DATE _____

TEL CO 012
BASE 1234 CONT GR CO
FORM CODE 80

ESS UNIT DISTRICT

SCHEDULE H
LIST NUMBER 1ST & 2ND DIGITS 00

TEN'S UNITS	TYPE MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	FAST SCAN	5 MINUTE COLLECT	2 WORD ITEM	REMARKS	TEN'S UNITS	TYPE MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	FAST SCAN	5 MINUTE COLLECT	2 WORD ITEM	REMARKS
22 23	24 26	27 28 29 30 31 32	33	34			22 23	24 26	27 28 29 30 31 32	33	34		
00	000	346				CYCLE COUNT	50						
01	005	014				ORIG CALL PC	51						
02		015				INC. CALL P.C.	52						
03		016				INC. CALL OVFL.	53						
04		031				INTRA-OFC P.C.	54						
05		032				INTRA-OFC. OVFL.	55						
06		017				DTS DP TEST	56						
07		019				" DELAY	57						
08		018				TT TEST	58						
09		020				" DELAY	59						
10		116				ORIG-TERM USE	60						
11	↓ 1	033				OUTG OVFL	61						
12	009					RSV	62						
13	001	123				CDR DP P.C.	63						
14		124				CDR T.T.	64						
15		125				CDR OVFL GRP	65						
16		130				REC-MF-TLN	66						
17		131				REC-MF-SLN	67						
18		132				REC-RP-TLN	68						
19		133				REC-RP-SLN	69						
20	002	123				CDR-DP OVFL	70						
21		124				CDR-T.T.	71						
22		125				CDR OVFL GRP	72						
23		130				REC-MF-TLN	73						
24		131				REC-MF-SLN	74						
25		132				REC-RP-TLN	75						
26		133				REC-RP-SLN	76						
27	000	123	✓		✓	CDR-D.P. USE	77						
28		124	✓		✓	CDR-T.T.	78						
29		125	✓		✓	CDR-OVFL GRP	79						
30		130	✓		✓	REC-MF-TLN	80						
31		131	✓		✓	REC-MF-SLN	81						
32		132	✓		✓	REC-RP-TLN	82						
33		133	✓		✓	REC-RP-SLN	83						
34	006	123			✓	CDR-D.P. MTCE	84						
35		124			✓	CDR.-T.T.	85						
36		125			✓	CDR.-OVFL GRP	86						
37		130			✓	REC-MF-TLN	87						
38		131			✓	REC-MF-SLN	88						
39		132			✓	REC-RP-TLN	89						
40		133			✓	REC-RP-SLN	90						
41	010					RSV	91						
42	010					RSV	92						
43	015	43				GENERAL PURPOSE	93						
44		44					94						
45		45					95						
46		46					96						
47		47					97						
48		48					98						
49		49					99						

OFFICE COUNTS

PEG COUNTS

OVERFLOW

USAGE

MAINTENANCE

GENERAL PURPOSE

SERVICE CIRCUITS

Fig. 2—Schedule H, ESS 1400 Form—Typical Entries (Sheet 1 of 2) (2.16, 3.14, 4.01)

DATE _____

TRAFFIC REGISTER ASSIGNMENT RECORD

NO 1 ESS 2 WIRE

ESS 1400 (04)TG-1A

SCHEDULE H (19)

LIST NUMBER 1ST & 2ND DIGITS 01 (20 21)

ESS UNIT DISTRICT

TEL CO 012 (3 4 5)

BASE 1234 (6 7 8 9) CONT GR 00 (10 11)

FORM CODE 8 0 (14 15)

TEN'S UNITS (22 23)	TYPE MEASUREMENT CODE (24 26)	EQUIPMENT GROUP OR OFFICE COUNT NUMBER (27 28 29 30 31 32)	FAST SCAN (33)	5 MINUTE COLLECT (34)	2 WORD ITEM	REMARKS	TEN'S UNITS (22 23)	TYPE MEASUREMENT CODE (24 26)	EQUIPMENT GROUP OR OFFICE COUNT NUMBER (27 28 29 30 31 32)	FAST SCAN (33)	5 MINUTE COLLECT (34)	2 WORD ITEM	REMARKS
00	008	L 0 0 L 0 0			✓	JUNCTOR USAGE	50						
01		L 0 0 L 0 1			✓		51						
02		L 0 0 L 0 2			✓		52						LINE - TO - LINE
03		L 0 1 L 0 1			✓		53						
04		L 0 1 L 0 2			✓		54						
05		L 0 2 L 0 2			✓		55						
06		L 0 0 T 0 0			✓		56						
07		L 0 0 T 0 1			✓		57						
08		L 0 0 T 0 2			✓		58						
09		L 0 1 T 0 0			✓		59						
10		L 0 1 T 0 1			✓		60						
11		L 0 1 T 0 2			✓		61						LINE - TO - TRUNK
12		L 0 2 T 0 0			✓		62						
13		L 0 2 T 0 1			✓		63						
14		L 0 2 T 0 2			✓		64						
15		T 0 0 T 0 0			✓		65						
16		T 0 0 T 0 1			✓		66						
17		T 0 0 T 0 2			✓		67						TRUNK - TO - LINE
18		T 0 1 T 0 1			✓		68						
19		T 0 1 T 0 2			✓		69						
20		T 0 2 T 0 2			✓		70						
21	010				✓	RSV	71						
22	010				✓	RSV	72						
23	019	0 0 0 1				CTX ORIG CALLS	73						
24	020	0 0 0 1				INC TO LDN	74						
25	021	0 0 0 1				DIAL "0"	75						
26	022	0 0 0 1				TRAN TO ATT	76						
27	032	0 0 0 1				RTE AUTO P.C.	77						
28	033	0 0 0 1				" " OVFL.	78						CENTREX COUNTS
29	034	0 0 0 1				PRIORITY AUTO	79						
30	007	0 0 1				ATT GRP 1-USE	80						
31	007	0 0 2				" 2-USE	81						
32	025	0 0 2				QUE P.C.	82						
33	026	0 0 2				OVFL	83						
34	027	0 0 2				USE	84						
35	009					RSV	85						
36	011	0 0				INC P.C TLN	86						
37	012	0 0				OVFL	87						
38	011	0 1				P.C	88						INCOMING NETWORK
39	012	0 1				OVFL	89						PEG COUNT AND
40	013	0 0				P.C TLN	90						OVERFLOW
41	014	0 0				OVFL	91						
42	013	0 1				P.C.	92						
43	014	0 1				OVFL	93						
44	009					RSV	94						
45	005	0 4 1				DISC - CALL PROC.	95						
46		0 4 3				OPR TRK	96						CALL PROCESSING
47		0 5 3				AMA	97						REGISTERS - USAGE
48		0 2 1				TRK FL TIME	98						
49		0 5 5				COIN CHG	99						

Fig. 2—Schedule H, ESS 1400 Form—Typical Entries (Sheet 2 of 2) (2.16, 3.14, 4.01)

ESS 1402 (05) TG-1A

TRAFFIC MEASUREMENT SCHEDULE

NO. 1/1A ESS 2-WIRE

(CTX-7, G1 AND LATER GENERIC PROGRAMS)

ESS UNIT District CGO DATE 6-25-76

START DATE TIME	SCHEDULE	(ROUTINE) TC-TIME-	DAYS							HOURS OF THE DAY																									QTR HOUR				REMARKS
			SUN.	MON	TUES	WED	THURS	FRI.	SAT	MIDNIGHT	1:00 A.M	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	NOON	1:00 PM	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	HOUR	1ST QTR	2ND QTR	3RD QTR	
START ALIT #		00																																			
STOP AUTO TRUNK PROG. #		01																																			
COLLECT	H(1)	02	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
COLLECT	H(2)	03	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	1	0	
COLLECT	H(3)	04																																			
COLLECT	C	05	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	
		06																																			
CONNECTED TRKS GRD *	H	07																																			
CONNECTED TRKS GRD *	C	08																																			
RECYCLE	W	09																																			
START COLLECT	W	10																																			
STOP COLLECT	W	11																																			
PRINT	D	12																																			
PRINT *	H(1)	13	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
PRINT *	H(2)	14	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	
PRINT *	H(3)	15																																			
PRINT *	C	16	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	
PRINT *	W	17																																			
START AUTO TRUNK PROG #		18																																			
TAPE PERFORATE *	H(1)	19																																			
TAPE PERFORATE *	H(2)	20	0	1	1	1	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	
TAPE PERFORATE *	H(3)	21																																			
TAPE PERFORATE *	C	22																																			

* DO NOT SCHEDULE FOR SAME QUARTER HOUR

PLANT DEPT ROUTINE

MESSAGE TO OBTAIN MATRIX PRINTOUT: TC-WORK-SET,03 13

Fig. 3—Traffic Measurement Schedule, ESS 1402 Form—Typical H and C Schedule Entries (2.18, 2.20)

WORKSHEET

H SCHEDULE

(a)	Total number of H schedule measurement items on Form 1400 (including reserved and spare).	256
(b)	Total number of 2-word items on H schedule — Form 1400 (All usage measurements other than type measurement code 005.) (CTX-6 and lower).	112
(c)	Total call store words used by Form 1400 H schedule assignments ([a] plus [b] for CTX-6 and lower or [a] times 2 for CTX-7 and higher).	368
(d)	Total call store words specified for H schedule on call store worksheet.	400

Item (d) *must be greater than or equal to* item (c).

C SCHEDULE

(a)	Total number of C schedule measurement items on Form 1400 (including reserved and spare).	256
(b)	Total number of 2-word items on C schedule — Form 1400 (All usage measurements other than type measurements code 005.) (CTX-6 and lower).	113
(c)	Total call store words used by Form 1400 C schedule assignments ([a] plus [b] for CTX-6 and lower or [a] times 2 for CTX-7 and higher).	369
(d)	Total call store words specified for C schedule on call store worksheet.	400

Item (d) *must be greater than or equal to* item (c).

Fig. 4—Traffic Register Call Store Word Determination—Example (4.06)

ESS 1400(04)TG-1A

TRAFFIC REGISTER ASSIGNMENT RECORD

NO 1 ESS 2 WIRE

DATE _____

TEL CO 012
BASE 1234 CONT GR CO
FORM CODE 8 0
ESS UNIT DISTRICT
SCHEDULE C
LIST NUMBER 1ST & 2ND DIGITS 00

TEN'S UNITS	TYPE MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	FAST SCAN	5 MINUTE COLLECT	2 WORD ITEM	REMARKS
00	000	347				CYCLE COUNT
01	001	124				UNI TRAN
02		126				TRI TRAN
03		127				IAO
04		128				WEATHER
05		129				TIME
06		132				NEWSLINE
07		133				RADIO CALL IN
08	009					RSV
09	009					RSV
10	002	123				4A Toll OVFL
11		124				UNI TRAN
12		126				TRI TRAN
13		127				INTRA OFC
14		128				WEATHER
15		129				TIME
16		132				NEWS LINE
17		133				RADIO CALLIN
18		123				4A TOLL
19	000					RSV
20	010					RSV
21	000	124			✓	UNI TRAN USE
22		126			✓	TRI TRAN
23		127			✓	INTRA OFC
24		128			✓	WEATHER
25		129			✓	TIME
26		132			✓	NEWSLINE
27		133			✓	RADIO CALLIN
28		123			✓	4A TOLL
29	010					RSV
30	004	140				OUT ON 2 WAY P.C.
31	004	141				" " " TIE
32	029	002				" SFGN CCSA
33	028	001				SFGN WATS
34	029	003				SFGN DL-9
35	001	142				1WAY OUT TIE LINE
36	009					RSV
37	001	144				1WAY OUT FX
38	009					RSV
39	009					RSV
40	002	140				2WAY TRK GRP OR
41	002	141				" TIE LINE
42	031	002				SFGN CCSA
43	031	001				SFGN WATS
44	031	003				SFGN
45	002	142				1WAY OUT TIE LINE
46	009					RSV
47	002	144				1WAY OUT FX
48	009					RSV
49	009					RSV

TEN'S UNITS	TYPE MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	FAST SCAN	5 MINUTE COLLECT	2 WORD ITEM	REMARKS
50	000	140			✓	2WAY TRK GRP USE
51	000	141			✓	" TIE LINE
52	029	002			✓	SFGN CCSA
53	029	001			✓	SFGN WATS
54	029	003			✓	SFGN DL-9
55	000	142			✓	1WAY OUT TIE
56	000	143			✓	" INC "
57	000	144			✓	" OUT FX
58	000	145			✓	1WAY
59	009				✓	RSV
60	003	140				INC ON 2WAY P.C.
61	003	141				" " "
62	030	002				" SFGN CCSA
63	009					RSV
64	009					RSV
65	009					RSV
66	001	143				1WAY INC TIE P.C.
67	009					RSV
68	001	144				1WAY INC FX P.C.
69	009					RSV
70	001	151				1WAY INC TRK P.C.
71	001	152				1WAY OUT TRK P.C.
72	009					RSV
73	023	173				OUT THRU SWT P.C.
74	023	174				INC " " P.C.
75	009					RSV
76						
77						
78						
79						
80	009					RSV
81	002	152				1WAY OUT OVFL
82	009					RSV
83	002	173				OUT THRU SWT OVFL
84	009					RSV
85	009					
86						
87						
88						
89						
90	000	151			✓	1WAY INC TRK USE
91	000	152			✓	" OUT " "
92	010				✓	RSV
93	000	173			✓	OUT THRU SWT USE
94	000	174			✓	INC " " "
95	010				✓	RSV
96					✓	
97					✓	
98					✓	
99					✓	

Fig. 5—Schedule C, ESS 1400 Form—Typical Entries (Sheet 1 of 2) (3.14, 4.01)

ESS 1400(04)TG-1A

TRAFFIC REGISTER ASSIGNMENT RECORD

NO 1 ESS 2 WIRE

DATE _____

TEL CO 005
BASE 1234 CONT GR CO
FORM CODE 8 0

ESS UNIT DISTRICT

SCHEDULE C
LIST NUMBER 1ST & 2ND DIGITS 01

TEN'S UNITS	TYPE MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	FAST SCAN	5 MINUTE COLLECT	2 WORD ITEM	REMARKS
00	041	001				NMG TCP-CT4A
01	〃	002				CT4A NMBSN1
02	〃	003				SK DP-HU
03	〃	004				CF 〃 〃
04	〃	063				CT HT-HU
05	↓	062				CF 〃 〃
06	043	0007				INTRA GRP
07	044	0007				DID
08	045	0007				DIAL '9'
09	046	0007				〃 '9'
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
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41						
42						
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44						
45						
46						
47						
48						
49						

TEN'S UNITS	TYPE MEASUREMENT CODE	EQUIPMENT GROUP OR OFFICE COUNT NUMBER	FAST SCAN	5 MINUTE COLLECT	2 WORD ITEM	REMARKS
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
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62						
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76						
77						
78						
79						
99						

NOTES:

These entries apply to CTX-6 and later Generics.

Fig. 5—Schedule C, ESS 1400 Form—Typical Entries (Sheet 2 of 2) (3.14, 4.01)

ESS 1401–1 (03)TG-1A

TRAFFIC REGISTER LAYOUT RECORD

NO. 1 ESS 2 WIRE

DATE _____

LIST NUMBERS 0000 TO 0099

SCHEDULE H PAGE 1

ESS UNIT DIVISION

ROW NO.	UNITS DIGIT 0	1	2	3	4	5	6	7	8	9
0	ORIG CALLS PC 005 014	OGTG OVFL PC 001 033	INC CALLS PC 005 015	INC CALLS OVFL 005 016	INTRA-OFC PC 005 031	INTRA-OFC OVFL 005 032	DTS → DP TESTS 005 017	DP DELAYS 005 019	TT TESTS 005 018	TT DELAYS 005 020
1	ORIG + TERM USE 005 116	PART DIAL ABDN PC 005 021	PART DIAL T.O. PC 005 022	FALSE STARTS PC 005 023	LINE BUSY INC PC 005 028	LINE BUSY INTRA-OFC PC 005 029	REVERTIVE CALLS PC 005 030	TRK-TRK MEM PC 005 034	TRK-TRK MEM USE 005 049	RSV 1-W 009
2	CDR-DP USE 000 100	CDR-TT 000 101	CDR-OVFL USE 000 102	TRNS-RP USE 000 103	TRANS-MF USE 000 104	REC-RP USE 000 105	REC-MF USE 000 106	BUSY TONE USE 000 107	COMM OVFL TONE USE 000 108	REG OVFL TONE USE 000 109
3	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001
4	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002
5	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006
6	POWER RING PH-1 USE 000 110	PH-2 USE 000 111	PH-3 USE 000 112	AUD RING PH-1 USE 000 113	PH-2 USE 000 114	PH-3 USE 000 115	COIN CONT USE 000 116	RSV 2W 010	RSV 2W 010	
7	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001	PC 001	RSV-1W 009	RSV-1W 009	
8	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	OVFL 002	RSV-1W 009	RSV-1W 009	
9	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	MTC 006	RSV-1W 009	RSV-1W 009	RSV-2W 010

Fig. 6—Schedule H, ESS 1401 Form—Typical Entries (3.14, 3.23)

TYPE MEAS. CODE	TRAFFIC ITEM	TYPE OF MEASUREMENT	ONE OR TWO WORD CALL STORE ITEM	PROVIDED WITH CTX – GENERIC
000	Trunk or Service Circuit Groups (Ten-second scan must be assigned to first 128 items of H schedule.	Usage	2	
001	One-Way Outgoing and Incoming Trunks or Service Circuits	Peg Count	1	
002	Trunk or Service Circuit Groups	Overflow	1	
003	Two-Way Trunk Group — Incoming	Peg Count	1	
004	Two-Way Trunk Group — Outgoing	Peg Count	1	
005	Office Counts	Peg Count Usage and Overflow	1	
006	Trunk Group Maintenance	Usage	2	
007	Centrex Attendant Group	Usage	2	
008	Junctor Group	Usage	2	
009	Reserved for One-Word Item (Type measurement code 009, CTX-6 and lower, can be used to reserve program store and call store words for any peg count, or overflow measurement listed as one under one or two word call store item.)			
010	Reserved for Two-Word Item (Type measurement code 010 can be used to reserve program store and call store words for any variable register usage measurement, including maintenance usage, listed as two under one or two word call store item. In offices with CTX-7 and higher generic programs, all type measurement codes (TMCs) will require two words and only TMC 010 will be used for reserved space.)			
011	Incoming to Line Link Network	Peg Count	1	
012	Incoming to Line Link Networks	Overflow	1	
013	Incoming to Trunk Link Networks	Peg Count	1	
014	Incoming to Trunk Link Networks	Overflow	1	
015	General Purpose Items	Peg Count	1	
016	Multiline Hunt Groups	Peg Count	1	
017	Multiline Hunt Groups	Overflow	1	
018	Multiline Hunt Groups	Usage	2	
019	Centrex Group Originating Calls	Peg Count	1	

Fig. 7—Type Measurement Codes (Sheet 1 of 4) (4.06)

TYPE MEAS. CODE	TRAFFIC ITEM	TYPE OF MEASUREMENT	ONE OR TWO WORD CALL STORE ITEM	PROVIDED WITH CTX – GENERIC
020	Centrex Group Incoming Calls to Listed Directory Number	Peg Count	1	
021	Centrex Group Dial "0" to Attendant	Peg Count	1	
022	Centrex Group Calls Transferred to Attendant (FLASH)	Peg Count	1	
023	Tandem Trunk Group	Peg Count	1	
024	Centrex Attendant Group Queue	Usage	2	
025	Centrex Attendant Group Queue	Peg Count	1	
026	Centrex Attendant Group Queue	Overflow	1	
027	Simulated Facilities Group	Usage	2	
028	Simulated Facilities Group One-Way Outgoing	Peg Count	1	
029	Simulated Facilities Group Two-Way Outgoing	Peg Count	1	
030	Simulated Facilities Group Two-Way Incoming	Peg Count	1	
031	Simulated Facilities Group	Overflow	1	
032	Centrex Routine AUTOVON Calls	Peg Count	1	
033	Centrex Routine AUTOVON Calls	Overflow	1	
034	Centrex Priority AUTOVON Calls	Peg Count	1	
035	Centrex Preemptions Exercised	Peg Count	1	
036	Centrex Preemptions Failed	Peg Count	1	
037	Centrex Calls Forwarded - Busy Line	Peg Count	1	
038	Centrex Calls Forwarded - Don't Answer	Peg Count	1	
039	Centrex Calls Forwarded - Regular	Peg Count	1	
040	Centrex Calls - Call Hold	Peg Count	1	
041	Centrex Call Forward Activations	Peg Count	1	
042	Centrex Call Pick-up	Peg Count	1	
043	Centrex Intragroup Calls	Peg Count	1	
044	Centrex DID Calls	Peg Count	1	
045	Centrex Dial "8" Calls	Peg Count	1	
046	Centrex Dial "9" Calls	Peg Count	1	
047	Coin Attempt By Initial Charge Condition	Peg Count	1	
048	Automatic Queuing of Trunks and Lines	Peg Count	1	
049	Automatic Queuing of Trunks and Lines	Overflow	1	
050	Automatic Queuing of Trunks and Lines	Usage	2	
051	Network Management Preprogram (PP) Trunk Group Control	Peg Count	1	

Fig. 7—Type Measurement Codes (Sheet 2 of 4) (4.06)

TYPE MEAS. CODE	TRAFFIC ITEM	TYPE OF MEASUREMENT	ONE OR TWO WORD CALL STORE ITEM	PROVIDED WITH CTX – GENERIC
052	Centrex Directed Call Pick-Up	Peg Count	1	7
053	Reserved			
054	Reserved			
055	Reserved			
056	Reserved			
057	Traffic Line Group	Peg Count	1	7
058	Traffic Line Group	Overflow	1	7
059	Agent Originating	Peg Count		8
060	Calls Transferred to Agent	Peg Count		8
061	Calls Transferred by Agent	Peg Count		8
062	Positions Busy	Usage		8
063	Positions Manned	Usage		8
064	Agents Idle and Available	Usage		8
065	Agents on Incoming Calls	Usage		8
066	Agents on Outgoing Calls	Usage		8
067	After Call Work	Usage		8
068	Positions Out of Service	Usage		8
069	Agent Originating (Reporting Group)	Peg Count		8
070	Calls Transferred to Agent (Reporting Group)	Peg Count		8
071	Calls Transferred by Agent (Reporting Group)	Peg Count		8
072	Positions Busy (Reporting Group)	Usage		8
073	Positions Manned (Reporting Group)	Usage		8
074	Agents Idle and Available (Reporting Group)	Usage		8
075	Agents on Incoming Calls (Reporting Group)	Usage		8
076	Agents on Outgoing Calls (Reporting Group)	Usage		8
077	After Call Work (Reporting Group)	Usage		8
078	Calls Abandoned from Queue	Peg Count		8
079	Calls Answered in Greater Than "X" Seconds	Peg Count		8
080	Calls Answered in Less Than or Equal to "X" Seconds	Peg Count		8
081	Traffic Service Index	—		8
082	Intraflow into Queue	Peg Count		8
083	Intraflow out of Queue	Peg Count		8

Fig. 7—Type Measurement Codes (Sheet 3 of 4) (4.06)

TYPE MEAS. CODE	TRAFFIC ITEM	TYPE OF MEASUREMENT	ONE OR TWO WORD CALL STORE ITEM	PROVIDED WITH CTX – GENERIC
084	Calls Offered to Queue	Peg Count		8
STØP	(Prevents Collection and Printout of Spare Registers)	Stop Code		

(127) Assign 127 or STOP code at the end of active TMCs and follow only with reserved or spare (TMC 010). The unassigned registers following this TMC will not be collected or printed, saving TTY time and eliminating value-less data. Although "STØP" is used for TDA purposes, the TMC is actually 127 and will be used in recent change messages. This is available with CTX-7 and higher generic programs.

Fig. 7—Type Measurement Codes (Sheet 4 of 4) (4.06)

(FOR CTX 8 AND LATER GENERIC PROGRAMS)

```
TRF-VFY-LIST H 0200 000020.PF

 23 TC17 TRAF SCHED H 000222

LIST     TMC       EGO    FS   5M
 200       5        59     0    0
 201       5        61     0    0
 202       9         0     0    0
 203      11         0     0    0
 204      12         0     0    0
 205      13         0     0    0
 206      14         0     0    0
 207       8    L03L07     0    0
 208       8    L00T00     0    0
 209       8    T00T00     0    0
 210      10         0     0    0
 211      10         0     0    0
 212      10         0     0    0
 213      10         0     0    0
 214       6       109     0    0
 215       6       110     0    0
 216       6       108     0    0
 217       6       107     0    0
 218       6       147     0    0
 219       6       148     0    0

FINISH VHC

   7/1 0:24

TRF-VFY-LIST C 0045 009999.PF

  25 TC17 TRAF SCHED C 000222

LIST     TMC       EGO    FS   5M
  45       2       134     0    0
  46       0       134     0    0
  47       1       135     0    0
  48       2       135     0    0
  49       0       135     0    0
  50       1       136     0    0
  51       2       136     0    0
  52       0       136     0    0
  53       1       120     0    0
  54       2       120     0    0
  55       0       120     0    0
  56       1       159     0    0
  57       2       159     0    0
  58       0       159     0    0

FINISH VHC

   7/1 0:26
```

Fig. 8—Traffic Register Verification Via TRF-VFY (CTX-8 and Later Generic Programs) (Sheet 1 of 2) (4.17)

```
                    (FOR CTX 8 AND LATER GENERIC PROGRAMS)
TRF-VFY-SRCH C 0002 000136.PF
   17 TC18 C 000222 51 2    136 0 0
TRF-VFY-SRCH H 0008 L00T00.PF
   18 TC18 H 000222 208 8 L00T00 0 0
TRF-VFY-SRCH H 0059 D03S03.PF
   19 TC18 H 000222 7777 59 D03S03 0 0
TRF-VFY-SRCH C 0127 000000.PF
   20 TC18 C 000222 236 127 0 0 0
TRF-VFY-SRCH H 0006 000107.PF
   21 TC18 H 000222 217   6  107   0  0
           ↑    ↑      ↑    ↑    ↑    ↑  ↑
       BLOCK OFFICE  LIST TMC  EGO   FS 5M
               ID

NOTE:
 1.  IF LIST = 7777 - REGISTER NOT FOUND, OUT OF RANGE
 2.  TMC 0127 IS EQUIVALENT TO "STØP".
```

Fig. 8—Traffic Register Verification Via TRF-VFY (CTX-8 and Later Generic Programs) (Sheet 2 of 2) (4.17)

H OR C OUTPUT MESSAGE FORMAT

```
00 BLOCK H* 000222 14:30 5/25/1975              13:30      5/25/1975
(0)
000138   000621   001001   000121   000006   009618   000014   000240   000079   000000

(1)
000913   006004   000515   000622   000051   001113   003619   000417   000900   000016

(2)
000743   006251   005138   000362   000812   000088   000111   000000   000000   000011



(41)
001621   000094   000096   000083   000071   000164   000000   000000   000000   000000

(42)
000913   000515   000198   000000   000000   000277   000311   000000   000000   000000

FINISH
         5/25     14:44
```

*The block type identifies the schedule

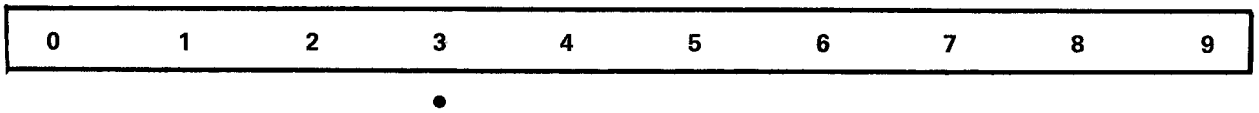
Fig. 9—Example of H or C Block Output Message Format and List Number Identification (Sheet 1 of 2) (5.01, 5.02)

H OR C OUTPUT MESSAGE FORMAT – LIST NUMBER IDENTIFICATION

```
00 BLOCK H* 000222 14:30 5/25/1975          13:30      5/25/1975
(0)
000138  000621  001001  000121  000006  009618  000014  000240  000079  000000

(1)
000913  006004  000515  000622  000051  001113  003619  000417  000900  000016

(2)
000743  006251  005138  000362  000812  000088  000111  000000  000000  000011
```



STRIP PREPARATION

A guide may be used for identification purposes. The numbers 0 to 9 are printed on the guide under each of the ten measurements.

LIST NUMBER IDENTIFICATION

(1) Place the strip under the row to be read.

(2) The number on the guide represents the last digit of the list number. The guide number in the example is three.

(3) The row number represents the next digit or digits. The row number in the example is two.

(4) Fill in the remaining digits to the left with zeros.

(5) In the example above, the data 000362 in identified as list number 0023

Fig. 9—Example of H or C Block Output Message Format and List Number Identification (Sheet 2 or 2) (5.01, 5.02)

H AND C BLOCK INTERCHANGE LIST

NO. 1 ESS

UNIT _____

(ORIGINATED BY NETWORK ADMINISTRATION – TTY)

(TC – CHANGE –)

H SCHEDULE

ACTIVE DATE	LIST LOC	REGISTER NO.	REGISTER TYPE	NEW TGN	OLD TGN
11-17-75	00	0096	U	132	014
	01	0106	P	132	014
	02	0116	O	132	014
	03				
	04				
	05				
	06				
	07				

C SCHEDULE

LIST LOC	REGISTER NO.	REGISTER TYPE	NEW TGN	OLD TGN	DEACTIVE DATE
08	0072	U	014	132	11-21-75
09	0082	P	014	132	
10	0092	O	014	132	
11					
12					
13					
14					
15					

REMARKS _____

_____

_____

Fig. 10—H and C Schedule Change List Activation—Typical Entries (6.09)

ESS 1402 (05) TG-1A

TRAFFIC MEASUREMENT SCHEDULE

NO. 1 / 1A ESS 2-WIRE

(CTX-7, G1 AND LATER GENERIC PROGRAMS)

ESS UNIT District C60 DATE 7-4-76

START DATE TIME	SCHEDULE	(ROUTINE) TC-TIME-	DAYS							HOURS OF THE DAY																								QTR HOUR				REMARKS
			SUN.	MON.	TUES.	WED	THURS.	FRI.	SAT.	MIDNIGHT	1:00 A.M.	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	NOON	1:00 P.M.	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	HOUR	1ST QTR	2ND QTR	3RD QTR	
START ALIT #		00																																			
STOP AUTO. TRUNK PROG. #		01																																			
COLLECT	H(1)	02	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	
COLLECT	H(2)	03																																			
COLLECT	H(3)	04																																			
COLLECT	C	05	0	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		06																																			
CONNECTED TRKS GRD *	H	07																																			
CONNECTED TRKS GRD *	C	08																																			
RECYCLE	W	09																																			
START COLLECT	W	10																																			
STOP COLLECT	W	11																																			
PRINT	D	12																																			
PRINT *	H(1)	13	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	
PRINT *	H(2)	14																																			
PRINT *	H(3)	15																																			
PRINT *	C	16	0	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
PRINT *	W	17																																			
START AUTO TRUNK PROG #		18																																			
TAPE PERFORATE *	H(1)	19																																			
TAPE PERFORATE *	H(2)	20																																			
TAPE PERFORATE *	H(3)	21																																			
TAPE PERFORATE *	C	22																																			

* DO NOT SCHEDULE FOR SAME QUARTER HOUR

PLANT DEPT ROUTINE

MESSAGE TO OBTAIN MATRIX PRINTOUT: TC-WORK-SET,03,13

Fig. 11—Assigning H and C Schedules for Continuous Study Hours—Typical Entries (7.02, 7.03)

TABLE A

CALL PROCESSING REGISTERS ARRANGED FOR FAST SCAN

OFFICE COUNT	ITEM
039	Call Forwarding Register Usage
041	Disconnect Register Usage
043	Operator Trunk Register Usage
045	Timed Scan Register Usage
047	Peripheral Order Buffer Usage
049	Trunk to Trunk Path Memory Register Usage
111	Conference Assist Register Usage
121	Trunk Flash Timing Register Usage
123	Reverting Call Register Usage
129	Bylink Dialing Senior Register Usage
135	Bylink Dialing Junior Register Usage
137	Hit Timing Junior Register Usage
150	Incoming Overload Control Queue Usage
152	Centralized Automatic Message Accounting (CAMA), Automatic Number Identification (ANI), and Operator Number Identification (ONM), Port 0 Register Usage
186	CAMA Queue Usage.

Note 1: The above items have a measurement code of 005.

Note 2: Table A is applicable up to generic program CTX-8, Issue 3. For future generic programs refer to Translation Guide TG-1A, Division 3, Section 4A.

TABLE B

DATA VALIDATION TESTS

1. BUSY TONE

Busy Tone PC (TGN ____)	_____ (a)
Line Busy INC (OCN 028)	_____ (b)
Line Busy IAO (OCN 029)	_____ (c)
Total Calls to Busy	_____ (d) = (b) + (c)

Note: (a) should be greater than or equal to (d) because originating calls to certain trunks such as recorded announcement and TSPS alternate route to busy tone when all trunks are busy.

TABLE B (Cont)

DATA VALIDATION TESTS

2. ORIGINATING CALL VERSUS CDR

Originating Calls PC (OCN 014)	_____	(a)
False Start PC (OCN 023)	_____	(b)
Permanent Signal PC (OCN 072)	_____	(c)
Blocked Dial Tone Queue PC (OCN 078)	_____	(d)
DP DTS Tests (OCN 017)	_____	(e)
TT DTS Tests (OCN 018)	_____	(f)
Total	_____	(g)
DP CDR Group PC (TGN ____)	_____	(h)
TT CDR Group PC (TGN ____)	_____	(i)
CDR OVFL Group OVFL (TGN ____)	_____	(j)
CDR Carried Calls	_____	(k) = (h) + (i) — (j)

Notes: (1) For SP offices (g) should be within 5 percent of (k). For CC offices (g) may be as much as 10 percent greater than (k).

(2) In CC offices, on a partial dial abandoned call, the CDR connection is not released for 4 seconds. If during that interval, another attempt is made to establish a connection, the same CDR is used for the second time, thus it is possible to have two peg counts on originating PC but only one on the CDR PC.

TABLE B (Cont)

DATA VALIDATION TESTS

3. INCOMING VERSUS RINGING

Incoming Call PC (OCN 015)	_____	(a)
IAO Call PC (OCN 031)	_____	(b)
Total INC + IAO Calls	_____	(c)
Tandem Call PC (OCN 131)	_____	(d)
Line Busy INC (OCN 028)	_____	(e)
Line Busy IAO (OCN 029)	_____	(f)
*Regular Ring Ph 1 (TGN ____)	_____	(g)
*Regular Ringing Ph 2 (TGN ____)	_____	(h)
*Regular Ringing Ph 3 (TGN ____)	_____	(i)
Special Ringing PC (TGN____)	_____	(j)
Total	_____	(k)

Notes: (1) (c) should be greater than or equal to (k) in all cases because (k) does not include incoming calls to intercept, permanent signal and reorder or calls to numbers assigned to a route index such as Centrex—CU direct indialed number blocks.

(2) (*) equals effective peg count which equals offered peg count minus overflow from previous ringing phase.

TABLE B (Cont)

DATA VALIDATION TESTS

4. A-LINK VERSUS JUNCTOR USAGE

L-L Junctor Usage × 2	_____	(a)
L-T Junctor Usage	_____	(b)
Total Junctor Usage	_____	(c) = (a + b)
A-Link Usage (OCN 116)	_____	(d)

Notes: (1) (c) should be greater than or equal to (d).

(2) Total junctor usage is equal to 2 × L-L plus L-T junctor usage.

(3) A-Link usage (OCN 116) is less than total junctor usage because A-Link usage may contain some reserve path usage whereas total junctor usage contains all reserve path usage.

(4) As the load increases, the A-Link and junctor usage will become more nearly the same.

H AND C BLOCK INTERCHANGE LIST

NO. 1 ESS

UNIT _____

(ORIGINATED BY NETWORK ADMINISTRATION – TTY)

(TC – CHANGE –)

H SCHEDULE

ACTIVE DATE	LIST LOC	REGISTER		NEW TGN	OLD TGN
		NO.	TYPE		
	00				
	01				
	02				
	03				
	04				
	05				
	06				
	07				

C SCHEDULE

LIST LOC	REGISTER		NEW TGN	OLD TGN	DEACTIVE DATE
	NO.	TYPE			
08					
09					
10					
11					
12					
13					
14					
15					

REMARKS _____

_____

_____

WORKSHEET

H SCHEDULE

(a) Total number of H schedule measurement items on Form 1400 (including reserved and spare). _____

(b) Total number of 2-word items on H schedule — Form 1400 (All usage measurements other than type measurement code 005.) (CTX-6 and lower). _____

(c) Total call store words used by Form 1400 H schedule assignments ([a] plus [b] for CTX-6 and lower or [a] times 2 for CTX-7 and higher). _____

(d) Total call store words specified for H schedule on call store worksheet. _____

Item (d) *must be greater than or equal to* item (c).

C SCHEDULE

(a) Total number of C schedule measurement items on Form 1400 (including reserved and spare). _____

(b) Total number of 2-word items on C schedule — Form 1400 (All usage measurements other than type measurements code 005.) (CTX-6 and lower). _____

(c) Total call store words used by Form 1400 C schedule assignments ([a] plus [b] for CTX-6 and lower or [a] times 2 for CTX-7 and higher). _____

(d) Total call store words specified for C schedule on call store worksheet. _____

Item (d) *must be greater than or equal to* item (c).