ORIGINATING CALL VOLUME DETERMINATION

DESCRIPTION

NETWORK SERVICES METHODS

CONTENTS   PAGE

CONTENTS   PAGE

1. GENERAL

1.01 This practice describes the method of determining total day originating calls for local switching entities. It explains the forms and procedures used in scheduling, collecting, validating, and reporting total originating peg count data. It also provides explanations and examples of the methods employed to reconstruct missing hourly data and incomplete daily data. Some of the information in this practice is in SS 56.15, Separations Traffic Studies.

1.02 This practice is reissued for the following reasons:

- To delete references to Division of Revenue

- Add procedures for DMS*-100

- Add information for TNDS

1.03 The Network Administrator has the responsibility to schedule, collect, validate and report local originating call data. However, final judgment of data usability will be the responsibility of the Separations Studies organization.

1.04 Total day originating call volumes serve various purposes. These counts should be accurate and should be consistent with the methods provided in this practice. Personnel responsible for these counts should know the uses, as outlined below, to fully appreciate the need for accuracy and consistency.

(a) *Statistical Reports:* Official company and system reports reflect call volumes, ie, Monthly Report Number 1. A prospectus covering proposed financing by a company and annual reports normally list local originating calls.

*Registered trademark of Northern Telecom Ltd.

(b) *Revenue Estimates:* Companies with message unit tariffs may use these counts to estimate monthly local revenues.

(c) *Separations Studies and Rate Requirements:* These counts are important in determining each company's share of pooled access charge revenues as well as its interstate and state rates of return for regulatory purposes. Further, originating call volumes are required by the Federal Communications Commission, and many state regulatory commissions.

(d) *Performance Measurements:* Originating call volumes are used in computing and weighting various indexes.

A. Definition of Originating Call

1.05 Generally, an originating call is an attempt to establish a connection with another telephone or an operator by dialing at least one digit. An originating call includes partial dial abandons and time-outs, but excludes false starts and permanent signals. CENTREX central office (CO) intraCENTREX group calls and common control switching arrangement (CCSA) are excluded from originating calls and are reported separately. The procedures in this practice are intended to produce counts that are reasonably comparable among the various types of central office equipment.

> *Note:* The terms "access lines" and "telephones" are synonymous in this practice.

B. Definition of Entity/CO Equipment

1.06 The term **entity** is defined for the various types of CO(s) equipment as follows:

(a) *Step-by-Step* is defined as all telephones having a common intermediate distributing frame.

(b) *No. 1 Crossbar* is defined as all telephones served by the same common originating marker group.

(c) *No. 3, 5 or 5A Crossbar* is defined as all telephones served by the same marker group.

(d) *No. 1, 2, or 3 ESS** is defined as all telephones served by the same central control group, including any 10A Remote Switching Systems (RSSs).

(e) *No. 5ESS†* is defined as all telephones served by the same control unit including any remote interface modules.

(f) *The DMS-10, DMS-100, DMS-100/200 System* is defined as all telephones served by the same central processing unit, including any remote equipment modules.

2. SCHEDULING

A. Monthly Volume Counts

2.01 Originating peg count studies should follow the **Schedule for Separations Studies Originating Peg Count Volumes** published annually by Bellcore. This schedule covers only the coming year (ie, 1985 schedule is contained in IL 84/08-079).

2.02 The network administrator is responsible for preparing an originating call study schedule for the coming year for each office. A copy of the schedule for each office on the Engineering and Administrative Data Acquisition System (EADAS) should be submitted to the Network Data Collection Center (NDCC) to ensure that it is aware of all scheduled studies. In those offices not equipped with mechanized data collection facilities, the network administrator is responsible for arrangements to have a peg count register manually read where necessary.

B. Frequency

2.03 Originating counts should be taken monthly (calendar month) in those entities where any of the following conditions is present:

(a) The registers required for these counts are under camera.

*Trademark of AT&T

†Trademark of AT&T

(b) Data collection is mechanized (eg, EADAS).

(c) Personnel are regularly available to read the registers.

(d) The entity is a growth entity located in a multientity exchange area.

(e) The entity is a stored program control system.

(f) The entity serves over 10,000 access lines.

2.04 In small entities where conditions (a) through (f) above do not apply, frequencies should be:

INTERVAL	ACCESS LINES
Quarterly	In all entities with 2,001 to 10,000 access lines
Semiannually	In all entities with 500 to 2,000 access lines
Annually	In a sample of entities with less than 500 access lines.

2.05 The above frequencies are the minimum required. More frequent counts may be desirable. However, once the frequency of counts for an entity has been determined for a calendar year, that frequency should be used throughout the year unless changes occur so that one of the six conditions in paragraph 2.03 applies.

2.06 To the extent possible, counts in entities studied other than monthly should be evenly distributed throughout the year as follows:

(a) Approximately one-third of the "quarterly" entities each month of the quarter.

(b) Approximately one-sixth of the "semiannual" entities each month of the 6-month period

(c) Approximately one-twelfth of the "annual" sample entities each month of the year.

C. Duration of Counts

2.07 Studies are generally taken for a minimum of 5 consecutive business days (Monday through Friday). The Monday following Friday is considered consecutive. Therefore, Tuesday through Monday would be acceptable as a second choice. Some circumstances warrant studies for only 2 business days. Counts for 2 business days should occur only where the cost of obtaining 5-day counts is prohibitive; eg, if necessary to schedule people to go to remote offices primarily to read peg count registers. The network administrator has the primary responsibility for identifying these offices.

2.08 Where 2-day counts are scheduled, historical data must show that the peg count days represent the month. Generally, a Monday-Tuesday or Thursday-Friday count is most representative. In scheduling 2-day studies for an entity, these paired days should be alternated through the calendar year. For example, with a quarterly schedule, the first and third quarters could be Monday-Tuesday and the second and fourth quarters could be Thursday-Friday.

2.09 All counts, **those taken every business day of the month,** should be scheduled as near the first of the month as possible. All study days should fall within the calendar month the study is to represent. None of the study days should be a major legal holiday or a day immediately preceding or following a major legal holiday; eg, Christmas, New Years, Thanksgiving, 4th of July, Labor Day, and Memorial Day. In some areas, judgment should be used because other days are considered major holidays. The week selected for the count should represent the traffic for the month.

2.10 For studies scheduled to include all business days of the month, **all** business days, including the days before and after major holidays, are reported.

2.11 Once the study duration has been determined for an entity for the year, the results of all scheduled counts made during the year should normally reflect that duration. This does not preclude taking an individual count for a longer duration, but the results to be reported depend on when the count of longer duration is taken. For example, assume that an entity is scheduled to take 2-day counts semiannually. If a special 5-day count is made within 5 weeks before or after a 2-day count is scheduled, it is permissible to use the

data from the 5-day count. The results reported should be for the usual 2 days as scheduled.

D. Rescheduling Counts

2.12 Heavy call loads on scheduled count days because of snowstorms, heavy rains, etc., that are likely to reoccur each year should **not** be considered cause for rescheduling counts. The results even for extreme days should **not** be excluded in entities taking counts on all business days of the month. There may be instances where an unusual occurrence during one or more of the scheduled peg count days, such as a catastrophe or a major service failure, produces completely unrepresentative results. This should occur infrequently, and the count should be rescheduled only if the event is so unusual that it cannot be expected to reoccur from year to year. The decision whether a count should be rescheduled should be made by the network administrator based on first-hand knowledge of local conditions.

2.13 There are many indicators of the relative severity of a storm other than reviewing the results of call counts during the storm period. Traffic associated with a severe storm will cause significant congestion in the local network, excessive dial tone delays, etc. Further, local newspapers normally carry descriptions of a storm's severity and the frequency of occurrences. When a count is rescheduled, with concurrence of Separations Studies, documentation should be retained in support of the decision for a minimum of either two later studies or 1 year, whichever is a longer time.

2.14 Rescheduled counts should be for the same number of days as were to be included in the originally scheduled study.

3. DATA COLLECTION

3.01 The network administrator and the NDCC are jointly responsible for scheduling and collecting total originating peg count data. In the camera and film environment, pictures are taken of registers associated with total originating peg counts for a specified time. The developed film is keypunched and transcribed to register readings by the NDCC where subtractions are performed to obtain the originating peg count. If a register difference program is used, the printouts are returned to the data group. However, if missing data hours occurs on the film, the register reading should be reconstructed.

3.02 With the availability of the Detailed Regulatory Process (DRP) Minutes of Use Data Accumulation (MOUDA) module, the ABD output reports are sent directly to the Separations Studies group rather than the network administrator. In a fully mechanized operation the total originating peg count is collected for every business day of the month. The NDCC should schedule the study, maintain the record and schedule bases, establish the Traffic Measurement Requests (TMRs) and keep the Network Administrator that is responsible informed. Figure 1 summarizes the data collection methods in chart form.

A. Total Network Data System (TNDS)

3.03 The EADAS is provided with data link interfaces into the local central office for traffic data collection. The EADAS central control unit accumulates this data and records it on magnetic tape for later processing by the Traffic Data Administration System (TDAS) component of TNDS. A general description of how originating peg count data is processed by TNDS is provided in the following paragraphs.

3.04 Depending on the type of local office and the EADAS interface, the magnetic tape recording function may be controlled by user-provided schedule entries.

3.05 For most of the electromechanical local entities, EADAS accumulates the traffic counts as they occur and records them on the EADAS output tape as a series of hour or half-hour measurements. Small offices equipped with pollable data terminals are exceptions.

3.06 In offices served by EADAS, a total 24-hour originating peg count is printed daily and summarized in a 24-hour summary report. This report provides counts of the various items needed for each type system. The collection intervals should be flagged with an "X" to show missing intervals.

3.07 In ESS entities, EADAS may receive the originating peg count data either as a series of hourly measurements covering the entire day or as a single set of 24-hour measurements collected once daily. The collection method used depends on the type and

generic issue of the switching entity and the EADAS interface arrangement. However, this collected data is recorded on the tape sent to TDAS in the same format as received by EADAS.

3.08 The TDAS module operates in the electronic data processing environment on a one-per-company or a one-per-operating-area basis. The TDAS system is generally run on a weekly cycle. It functions as follows:

    (a) Combines the data from all the EADAS installations in the company or area into a single data base

    (b) Sorts the measurements and screens out the unwanted data

    (c) Performs certain validation tests on the data

    (d) Reformats and outputs measurements for later processing by a number of "downstream" systems.

3.09 The processing functions of TDAS are controlled by the common update record base developed from user specifications or transactions. It contains information on the measurement arrangements in each local entity and the schedules under which data is to be provided for each downstream system.

B. Small Office Network Data System (SONDS)

3.10 The Small Office Network Data System (SONDS) measures customer service and provides network data for small unattended step-by-step offices. This is done via usage scanning devices, pollable data terminals, and dial tone speed measuring equipment at the office location. A central computer collects the data, checks it for accuracy, and reports the information over the network.

3.11 In a typical SONDS application, a pollable terminal scans the various peg counts and usage, and stores the peak hour and total day data. This data is available by command from either a data terminal or the SONDS computer via dialup facilities. The SONDS computer automatically polls the data terminals each day and generates daily reports for each office using a dialup facility. Originating call volumes are col-

lected in this way. The type of stored data is defined by a unique office map generated by an AT&T time-share computer and is retrieved by the user via a dialup terminal.

4. DEVELOPING ORIGINATING CALL VOLUMES

4.01 Originating call volumes are developed according to the type of switching equipment as follows. (Refer to paragraph 1.05 for a general definition of an originating call for any system not included in this part.)

4.02 *Validation:* The data collected should be validated immediately so that problems may be cleared as soon as possible. If the data proves to be invalid, the study period should be extended or rescheduled. Extend the study for ESS, DMS, and Electromechanical systems with EADAS. Reschedule the study for Electromechanical systems non-EADAS. Figures 2 through 6 are worksheets to be used to record the validation data.

A. Step-by-Step

4.03 In noncommon control entities where the first selectors are wired to score the traffic registers on "cut-through," the originating call volume is determined as follows:

    (a) Sum of first selector peg count (totalizing registers by class of selector or in total).

    (b) Minus CENTREX CO intracustomer group calls included in the first selector count. (These CENTREX calls are reported separately.)

    (c) Minus permanent signal holding trunk (PSHT) peg count when TOUCH-TONE* service is provided by receiver converters or originating registers. (totalizing registers by class of selector or in total).

4.04 In noncommon control entities where the first selectors are wired to score the traffic selectors on release:

*Registered service mark of AT&T.

(a) The sum of the second selector and outgoing trunk group peg counts (used as an equivalent first selector count)

(b) Minus PSHT count unless the PSHTs are served from the first selector.

4.05 In noncommon control entities not equipped with first selector or second selector peg count registers, there is not an approved method for seperations studies.

4.06 In partially or fully equipped common control entities with senderized recycle (alternate route feature), the register-controlled outpulsing peg count must be deducted from the originating call volumes described above for the type of first selectors used. All other counts are similar to those described.

4.07 Where all groups are arranged for common control operation and the "A" digit translation feature is not used, the translator seizure peg count may be used instead of the measurements described for noncommon control entities.

B. No. 1 Crossbar

4.08 Originating call volumes are determined as follows:

(a) The sum of the subscriber district junctor peg counts.

(b) Minus the district junctor test peg count.

OR

The total originating marker peg count minus the sum of the office link frame overflows.

(c) Minus the PSHT peg count.

(d) Minus private line class of service peg count.

C. No. 5 Crossbar

4.09 Originating call volumes are determined as follows:

(a) The sum of the total originating peg counts, both dial pulse and TOUCH-TONE service, including outward wide area telephone service (OUTWATS) calls.

(b) Plus the abandoned partial dial peg count.

(c) Minus PSHT peg count.

(1) With expanded permanent signal routing, add the PSHT group peg count to the peg count of the trunk group assigned for permanent signal trouble conditions. The latter can be obtained by using the peg count from a preroute relay inserted in front of the common overflow trunk group.

(2) The marker routes PSHT group overflows to the common overflow trunk group. If both groups are busy, the marker drops the call and the line seizes another originating register. This cycling continues to score the permanent signal peg count (PSPC) register each time the PSHT group is found busy. None of the attempts result in an originating peg count. The following adjustment formula to calculate the permanent signals that do score an originating peg count assumes that the permanent signals overflowing from the common overflow trunk group equals the permanent signal overflows reduced by a ratio of the common overflow peg count to its overflows:

Adjusted PSPC (unmodified office) equals:

PSPC − [(Permanent Signal Overflow ×

(Common Overflow Overflow) ÷ (Common Overflow PC)]

OR

Adjusted PSPC (modified office) equals:

PSPC + (Common Overflow Peg Count)

(d) Minus CENTREX CO intracustomer group peg counts, consisting of the extension-to-extension and extension-to-attendant peg counts

(e) Minus 24-hour private line CCSA originating peg count. The CCSA originating calls contained in the total originating peg count in item (a) above are only subtracted when the entity serves as a switching office for CCSA private line switching. In this case, the following calls are subtracted:

(1) The CCSA access lines connected to the link frame as represented by the CCSA class of service peg counts (state or interstate)

(2) Collocated CENTREX CO extension "Dial "8" peg count, or access group controller (AGC) originating peg count (state or interstate).

D. No. 1/1A ESS

4.10 For No. 1/1A ESS generic programs through 1E7 and 1AE7, the originating call volumes can be determined as follows:

(a) Total originating peg count from the TDR-01 printout.

(b) Minus CENTREX CO intracustomer group from the TDR-01 printout.

(c) Minus the 2-wire private line (CCSA) originating peg counts from the TDR-01 printout (state and interstate).

(d) Where the No. 1/1A ESS serves one or more No. 10A RSSs, the total originating peg count measurement will include the total call volumes originated by both the host and remote subscribers.

Note: There is no longer a need to collect Remote Call Forwarding (RCF) peg counts.

4.11 For No. 1/1A E8 and later generic programs the originating calls are reported on the TDR-02 Measurement Schedule. The Separations Matrix must be assigned to receive the TDR-02 report. These machines may use the TDR-01 optionally as a source.

E. No. 2/2B ESS

4.12 Originating call volumes for No. 2 ESS LO-1 and EF-1 and No. 2B ESS 2BEF-1 generic programs are determined as follows:

(a) Total originating calls (Register OFT-06)

(b) Minus CENTREX CO intracustomer group calls:

(1) CENTREX user-dialed CENTREX station (Register CTX03)

(2) CENTREX user-dialed attendant (Register CTX04).

4.13 Originating call volumes for No. 2 ESS generic EF-2 and No. 2B ESS generic 2B EF-2 and later programs are determined as follows:

(a) Total originating calls (register D06 and D07).

Note: The total originating calls equals register D07 times 65.536 plus register D06.

(b) Minus CENTREX CO intracustomer group calls:

(1) CENTREX user-dialed CENTREX station (register CXA3)

(2) CENTREX user-dialed attendant (register CXA7).

F. No. 3 ESS

4.14 Originating call volumes for No. 3 ESS programs are taken directly from originating call peg counts (DOR01).

G. No. 5ESS

4.15 Originating call volumes for No. 5ESS are collected directly from the originating call peg count register.

H. DMS-10 Digital Switching System

4.16 Originating call volumes for the DMS-10 System are determined using the originating service (OSVC) measurement block (OAMOO2) as follows:

(a) Total originating calls (TOTC register)

(b) Minus false start (FSTR register)

(c) Minus permanent signals (PSIG register).

I. DMS-100 Digital Switching System

4.17 Originating call volumes for the DMS-100 are determined using either Operational Measurements (OM) or the Traffic Separations Measurement System (TSMS). The Operational Measurements Group Method is as follows:

(a) Total originating attempts (Register NORIG and NORIG2) from the OFZ Group.

Note: The total originating attempts equals register NORIG2 times 65,536 plus register NORIG (this applies to single precision only). If double precision, use only NORIG.

(b) Minus ORIGLKT from the OFZ Group originating lockout.

(c) Minus ORIGABDN from the OFZ Group originating abandon (ORIGABDN includes false starts and ABPD without time out.)

(d) Minus the Permanent Signal Recorded Announcement Peg Count (ANNATT) from ANN Group.

(e) Minus Station to Station intra Group Calls: STNSTN from the IBN Group (one STNSTN register per IBN customer group).

4.18 The following is the TSMS Method with generic program BCS 13 and later. All peg count measurements are from the Traffic Separation or Traffic Analysis Table (TFCANA) report.

(a) The sum of all the TFCANA registers that are assigned to the intersection of subscriber line Source Traffic Separation Numbers (STSN) and the Destination Traffic Separation Numbers (DTSN) 10 through 127, excluding those DTSN's assigned to ROH Tone and Announcement, Revertive Calling Tone and Announcement and IBN DTSN's (IBN—CO station to station).

(b) Plus the sum of the following generic destinations.

(1) Test Lines (DTSN number 2.)

(2) Call Forwarding (DTSN number 4.)

(3) Speed Calling (DTSN number 5.)

(4) Revertive Calling (DTSN number 6.)

(5) Partial Dial Abandon (PDADTS) (DTSN number 8.)

J. Crossbar Tandem

4.19 Entities providing direct access to the message telephone network for OUTWATS access lines or trunks incoming from a CENTREX customer unit or private branch exchange (PBX) should be included in originating call volumes even though they do not originate from a "local" office. If peg counts of these call volumes are not available, they should be estimated.

5. RECONSTRUCTING MISSING DATA

5.01 In non-DRP MOUDA locations the network administrator will be responsible for reconstructing missing data. Under normal conditions, an attempt should be made to extend the study period before reconstructing any data. Required adjustments should be kept to a minimum, and the method used should be in compliance with accepted procedures. **Under no circumstances should more than 25 percent of the data for an entire day be reconstructed.**

5.02 Adjustments should be logical and reasonable. If one or more hours are missing for a given count for Monday through Friday, the missing data may be reconstructed using one of the following methods.

(a) *Individual hours:* Determine the average relationship between the missing data and the previous or later hours of the remaining days. Using these ratios, develop the like hour of the missing day's data. Fill in the data blanks with the computed value, flagged with an asterisk (*), and develop a daily total also flagged with an asterisk. The asterisk will show computed data.

(b) *Total Day:* Develop a daily total from the data hours, flagged with a number sign (#), to show incomplete data. Determine the average relationship between the total volumes of the remaining days (except those with missing data) and the total volumes for the same weekdays of the previous month. The previous month must contain a similar week (eg; heavy snow, ice storm, etc) that could offset the relationship. This ratio is applied to the daily total for the current month. These relationships should not be developed for those days that the total day's data for the previous month was computed.

5.03 If one or more hours are missing for a given count each day, report the total flagged to show incomplete data (#). Unless a suitable method is determined, it will not be possible to compute accurate total day volumes.

5.04 Where the daily total is flagged to show computed data (*), the total computed volume for each day is determined as follows:

(a) Where hourly data is provided, divide the sum of the hourly data developed for the data blanks by the computed daily total.

(b) Where daily totals are provided, subtract the incomplete daily total from the computed daily total and divide the remainder by the computed daily total.

If the proportion of created data exceeds 25 percent of total day volume, the data for that day is invalid and will not be used to compute the average business day (ABD) volume.

5.05 Whenever data for 3 or more days are invalid, the remaining 2-days of the 5-day study should not be used to develop ABD data. Where possible, a new study should be made; or call rates from previous studies should be used.

5.06 After developing daily totals, compare them with the daily totals from the preceding month, and compute the percentage difference between the 2 months for each day. If the difference falls outside the 10 percent range (±), examine the reasonableness of the data and use these values only if they appear logical. The Separations Studies personnel have the

responsibility for developing and analyzing this relationship.

6. SUMMARIZING RESULTS

A. Local Originating Peg Count Summary, Form E-5146

6.01 The daily peg counts for each entity are entered on Form E-5146 (Fig. 7) for the business days being studied. At the end of the study period (usually 5 days), the values are summed and the ABD originating calls are developed according to the formulas on the form. Notes should be entered to explain significant variations such as extreme weather conditions, new service offerings, and movement of subscribers into or out of the office. These notes should be entered on Form E-5146 for future reference.

B. Monthly Originating Calls, Average Business Day, Form E-5147

6.02 Form E-5147 (Fig. 8) Monthly Originating Calls, Average Business Day, is prepared for each entity, including not only those with monthly, quarterly, semiannual, or annual counts, but also those entities with less than 500 access lines that are not selected for counts. It is used to post and develop the following data for the entity each month:

(a) Total access lines

(b) ABD originating calls (excluding CENTREX CO intracustomer calls and CCSA calls)

(c) ABD call rate per access line.

The call rates on Form E-5147 identify significant trends, period over period, and display variations from previous periods as possible causes for further investigation. Also, examine call rates from offices with similar characteristics to detect significant variations worthy of further investigation.

6.03 The sources for the entries in Columns B, C, and D of Form E-5147 (Fig. 8) are shown below:

(a) *Column B, Total Access Lines:* The entry opposite the month shown in Column A is the total access lines as reported for the preceding month.

(b) *Column C, ABD Originating Calls:* Complete Column C as follows:

(1) *Monthly, quarterly, and semiannual entities:* For months where counts are taken, the source is Form E-5146 (Fig. 7). For months without counts, the source is Column B multiplied by Column D.

(2) *Entities with less than 500 access lines:* For these entities, both sample and nonsample, the source is Column B multiplied by Column D.

(c) *Column D, Call Rate:* Complete Column D as follows:

(1) *Monthly, quarterly, and semiannual entities:* For months where counts are taken, the source is Column C divided by Column B. For months without counts, carry forward the last computed call rate.

(2) *Entities with less than 500 access lines:* For these entities, both sample and nonsample, enter the latest weighted average call rate from Form E-5148 (Fig. 9). (See Part 7.)

(d) *Notes:* Enter notes from E-5146 (Fig. 7).

6.04 The network administrator is responsible for completing both the E-5146 and the E-5147 and for sending copies of the E-5146 to the Separations Studies group.

7. SAMPLING ENTITIES WITH LESS THAN 500 MAIN STATIONS

A. General

7.01 Some areas have many entities serving less than 500 access lines. Generally, these entities account for a small percentage of the total originating calls in the area. To minimize the cost of obtaining the necessary call data at all these locations, the call volumes for this group of entities is based on annual peg counts in selected sample entities. Weighted average call rates developed from these counts are used to compute call volumes each month for each of these entities, both sampled and nonsampled.

B. Determining the Number of Sample Entities

7.02 The number of entities to be studied each year is based on the requirements determined from Table A that recognizes the relative proportion of the total access lines in an area that are in entities having less than 500 total access lines.

7.03 Determining the number of sample entities in an area or a state is the responsibility of the area, state, or company Network Administration staff as locally desired. The number of entities in the sample should be determined in the following way each year before preparing the annual study schedule:

(a) Determine the total access lines served by all entities with less than 500 access lines in the area.

(b) Determine the total access lines in the area.

(c) Determine the percentage of the total access lines served from entities with less than 500 access lines ($[a \div b] \times 100$).

(d) Refer to the appropriate Column in Table A to determine the number of entities to be studied. For example, if the percentage in item (c) is 6.5 and the total entities under 500 access lines is 48, originating call counts would be required in 17 entities.

C. Selecting Individual Sample Entities

7.04 Selecting individual sample entities is the responsibility of the staff group that determines the number of sample entities. This staff group should seek the inputs of the involved Network Administration offices since they should be familiar with the characteristics of their offices. The staff is responsible, also, for computing the weighted average call rate and communicating the new values to each Network Administration office for use on Forms E-5146 and E-5147.

7.05 The entities to be selected for call counts are those that collectively represent average conditions for all entities in this classification. Items to be considered are access line growth rate, call rates, distribution by type of central office equipment and distribution by geographical area. Because of the complications introduced, it generally is desirable to avoid entities with relay or link type central office equipment in making the sample selections.

7.06 Consideration should be given to the selection of different entities so that over a period of several years, most entities in the classification (other than relay or link type) would have originating call studies.

D. Computing a Weighted Average Call Rate

7.07 The weighted average call rate of the studied entities may be applied to the total access lines in each of the entities having less than 500 access lines to arrive at ABD originating calls. A weighted average call rate in an area is based on at least 1 year's data. Thereafter, the weighted average call rate is recomputed quarterly.

E. Weighted Average Call Rate, Sample Entities Under 500 Access Lines, Form E-5148

7.08 This form is provided for computing the weighted average call rate. As the counts are completed in each sample entity, Form E-5148 (Fig. 9) entries are made as described below:

(a) *Column A:* Enter the sample entity.

(b) *Column B:* Opposite the entry in Column A, enter the total access lines from Form E-5147 (Fig. 8), Column B.

(c) *Column C:* Opposite the entry in Column B, enter the ABD originating calls from Form E-5146 (Fig. 7)

(d) *Column D:* Opposite the entry in Column C, enter the dates of the count on which the calls in Column C were based.

(e) *Column E:* After completion of all sample entity counts, compute the weighted average call rate as follows:

(1) Add the entries in Columns B and C.

(2) Enter the totals after the last entry in each of the respective Columns. Encircling the totals may make addition easier in future computations.

(3) Opposite the totals in Columns B and C, enter the period covered.

(4) Divide the total in Column C by the total in Column B.

(5) Enter the result in Column E.

F. Quarterly Revision of Weighted Average Call Rate

7.09 The weighted average call rate should be recomputed each quarter as follows:

(a) In Columns A through D enter the data, as indicated, for each of the entities studied during the quarter.

(b) Line out the entities that were studied during the same quarter, 1 year ago (ie, always use 4 quarters).

(c) Determine new totals for Columns B and C, omitting the data for the quarter lined out and including the data for the entities studied during the recent quarter.

(d) Enter the period covered in Column D.

(e) Divide the Column C total by the Column B total to determine the new weighted average call rate and enter the result in Column E.

7.10 Sometimes, counts cannot be fairly scheduled in all months of the year. However, the principles of scheduling and sampling, as outlined in this practice, should be adhered to in taking sample counts and computing weighted average call rates.

TNDS/DRP INTERFACES

CASE	DATA SOURCE	DATA COLLECTOR			DRP INTERFACE	
		SYSTEM	GENERIC	INTFC.	METHODS	SOURCE
1	Electromechanical	SONDS			Manual:	Monthly Total Office Originating Peg Count Report
2	Electromechanical	EADAS	ANY		Manual:	Norgen Originating Peg Count Summary #
					Mechanized:	Hourly Counts
3	No. 1 ESS Pre Generic 1/1AE8	EADAS	ANY		Mechanized:	TDR-01 Schedule
4	No. 1/1A ESS Generic 1/1AE8	EADAS	1AED6 or 1BED1		Mechanized:	"T"-Schedule (TDR-02)
5	No. 2 ESS Generic LO-1, EL-1, 2B-EF-1	EADAS	ANY		Mechanized:	"H"-Schedule "D"-Schedule
6	No. 2 ESS Generic EF-2, 2B-EF-1	1 EADAS 1A EADAS	ANY		Mechanized:	"H"-Schedule "D"-Schedule
7	No. 2 ESS Generic EF-2, 2B-EF-1, 2BE3	1A EADAS	ANY		Mechanized:	"H"-Schedule "D"-Schedule
8	No. 2 ESS Generic 2BE4	EADAS	1AED6 or 1BED1		Mechanized:	"H"-Schedule "D"-Schedule
9	No. 5 ESS Generic 5E2(2)	EADAS	1AED6 or 1BED1		Mechanized:	"H"-Schedule "D"-Schedule
10	No. 5 ESS Generic 5E1(2)	1AED5 or 1BED1			Mechanized:	"D"-Schedule
11	DMS-10 Generic 209/302	EADAS	1AED5 or 1BED1		Mechanized:	"H"-Schedule "D"-Schedule
12	DMS-100 Generic BCS-15	1AED7 or 1BED2 (4Qtr 85)			Mechanized:	"H"-Schedule "D"-Schedule

NOTES

This interface is recommended only if the increased time required for the mechanized interface is not available.

Fig. 1 — TNDS/DRP Interfaces

AREA _____

ENTITY _____

NO. 1 CROSSBAR
PEG COUNT VALIDATION

Month/Year	Ofc. L.K. Fr. P.C.	+	Orig. Mkr. P.C.	=	Ratio 1.0-1.3		%•Peg Count Dev.		Note
Jan.									
Feb.									
Mar.									
Apr.									
May									
June									
July									
Aug.									
Sept.									
Oct.									
Nov.									
Dec.									
Jan.									
Feb.									
Mar.									
Apr.									
May									
June									
July									
Aug.									
Sept.									
Oct.									
Nov.									
Dec.									

NOTES:

Prepared By _____

* Peg Count Deviation Threshold = ± 10%

Telephone No. _____

Fig. 2—No. 1 Crossbar Worksheet

AREA _____

NO. 5 CROSSBAR
PEG COUNT VALIDATION

ENTITY _____

Month/ Year	Orig. Reg. P.C.	÷	Total Orig. P.C.	+	APD P.C.	+	Dial Tone Tests	=	Ratio 1.0-1.3	• % Peg Count Dev.		Note
Jan.												
Feb.												
Mar.												
Apr.												
May												
June												
July												
Aug.												
Sept.												
Oct.												
Nov.												
Dec.												
Jan.												
Feb.												
Mar.												
Apr.												
May												
June												
July												
Aug.												
Sept.												
Oct.												
Nov.												
Dec.												

NOTES:

Prepared By _____

* Peg Count Deviation Threshold = ± 10%

Telephone No. _____

Fig. 3—No. 5 Crossbar Worksheet

AREA _____ NO. 1 ESS .92- .97-
PEG COUNT VALIDATION - RATIO 1.01 CC Ofc: 1.03 SP Ofc.

ENTITY _____

Month/Year	Tot Orig. P.C.	+	Total DP/TT CDR P.C.	-	CDR OF1	+	False Start P.C.	+	Perm. Sig. P.C.	+	Blkd. D.T. Queue P.C.	+	DP/TT Dial Tone Tests	=	(Pure) CDR PC	Orig. - PC + Pure CDR P.C. = Ratio	* % Peg Count Dev.	Note
Jan.																		
Feb.																		
Mar.																		
Apr.																		
May																		
June																		
July																		
Aug.																		
Sept.																		
Oct.																		
Nov.																		
Dec.																		
Jan.																		
Feb.																		
Mar.																		
Apr.																		
May																		
June																		
July																		
Aug.																		
Sept.																		
Oct.																		
Nov.																		
Dec.																		

NOTES:

* Peg Count Deviation Threshold = ± 10%

Prepared By _____

Telephone No. _____

Fig. 4—No. 1 ESS Worksheet

AREA _____

ENTITY _____

NO. 2 ESS
PEG COUNT VALIDATION

Month/ Year	Tot. CDR P.C.	÷	Orig. P.C.	+	Perm. Sig. P.C.	+	False Start P.C.	=	Total Orig. P.C.	Ratio .96-1.00	• % Peg Count Dev.	Note
Jan.												
Feb.												
Mar.												
Apr.												
May												
June												
July												
Aug.												
Sept.												
Oct.												
Nov.												
Dec.												
Jan.												
Feb.												
Mar.												
Apr.												
May												
June												
July												
Aug.												
Sept.												
Oct.												
Nov.												
Dec.												

NOTES:

* Peg Count Deviation Threshold = ± 10%

Prepared By _____

Telephone No. _____

Fig. 5—No. 2 ESS Worksheet

AREA _____   NO. 3 ESS
                               PEG COUNT VALIDATION

ENTITY _____

Month/ Year	DP/TT CDR P.C.	Minus CDR OFLS	=	Tot. CDR P.C.	+	Orig. P.C.	+	P.S. T.O.	+	FS PC	=	Total Orig. P.C.	Tot. CDR PC + Tot. Orig. PC—Ratio .97-1.03	% Peg Count Dev.	Note
Jan.															
Feb.															
Mar.															
Apr.															
May															
June															
July															
Aug.															
Sept.															
Oct.															
Nov.															
Dec.															
Jan.															
Feb.															
Mar.															
Apr.															
May															
June															
July															
Aug.															
Sept.															
Oct.															
Nov.															
Dec.															

NOTES:

* Peg Count Deviation Threshold = ± 10%

Prepared By _____

Telephone No. _____

Fig. 6—No. 3 ESS Worksheet

Local Originating Peg Count Summary

E-5146   Page 1 of 2

☐ Monthly   ☐ Semi-Annually   Entity   Dates Of Count
☐ Quarterly   ☐ Annually

| | Items | Days of the Week | | | | | Total | Average Business Day |
		Mon	Tues	Wed	Thur	Fri		
Step-By-Step								
1.	First Selector PC							
2.	Second Selector PC							
3.	Outgoing Trunk First Selector PC							
4.	Centrex-CO Intra Customer PC							
5.	Perm. Signal Holding Trunk PC							
6.	OR Controlled Outpulse PC							
7.	Orig. Calls Cut Thru (1-4-5-6)							
8.	Orig. Calls Release (2+3-5-6)							
No. 1 Crossbar								
1.	Subscriber Dist. Junctor PC							
2.	Total Orig. Marker PC							
3.	Office Link Frame Overflow							
4.	Dist. Junctor Test PC							
5.	Perm. Signal Holding Trunk PC							
6.	Private Line Class Of Service PC							
7.	Orig. Calls (1-4-5-6)							
8.	Orig. Calls (2-3-4-5-6)							
No. 3, 5, And 5A Crossbar								
1.	Total Orig. PC (DP, TT And OUTWATS)							
2.	Abandoned Partial Dial PC							
3.	Perm. Signal Holding Trunk PC							
4.	Centrex-CO Intra-Customer PC							
5.	CCSA Orig. PC							
6.	Orig. Calls (1+2-3-4-5)							

Developing Originating Count From Call Rate

1.	Call Rate Used X	Total Access Lines	ABD Orig. PC

Notes

Fig. 7—Local Originating Peg Count Summary, Form E-5146 Sheet 1 of 2

| | Monthly | | Semi-Annually |
| | Quarterly | | Annually |

	Items	Days of the Week					Total	Average
		Mon	Tues	Wed	Thur	Fri		Business Day

No. 1/1A Electronic Switching System

		Mon	Tues	Wed	Thur	Fri	Total	Average Business Day
1.	Total Orig. Calls PC							
2.	Centrex-CO Intra-Customer PC							
3.	CCSA Orig PC							
4.	Orig. Calls (1-2-3)							

No. 2/2B (LO-1, EF-1, 2BEF-1) Electronic Switching System

		Mon	Tues	Wed	Thur	Fri	Total	Average Business Day
1.	Total Orig. Calls (OFT-06)							
2.	Centrex-CO (CTX-03 and CTX-04)							
3.	Orig. Calls (1-2)							

No. 2/2B (EF-2 and later) Electronic Switching System

		Mon	Tues	Wed	Thur	Fri	Total	Average Business Day
1.	Total Orig. Calls (D06 and D07)							
2.	Centrex-CO (CXA-3 and CXA-7)							
3.	Orig. Calls (1-2)							

No. 3 and 5 Electronic Switching System

		Mon	Tues	Wed	Thur	Fri	Total	Average Business Day
1.	Orig. Call PC							

Digital Multiplex System-10 (OPM 002)

		Mon	Tues	Wed	Thur	Fri	Total	Average Business Day
1.	Total Orig. PC							
2.	False Starts PC							
3.	Permanent Signals PC							
4.	Orig. Calls (1-2-3)							

Digital Multiplex System-100

		Mon	Tues	Wed	Thur	Fri	Total	Average Business Day
1.	Total Orig. Attempts							
2.	ORIGLKT							
3.	ORIGABDN							
4.	Permanent Signals (ANNATT)							
5.	Station to Station (STNSTN)							
6.	Orig. Calls (1-2-3-4-5)							

Fig. 7—Local Originating Peg Count Summary, Form E-5146 Sheet 2 of 2

Monthly Originating Calls
Average Business Day   E-5147

Entity	Company	Area	State
Frequency Of Counts	☐ Monthly ☐ Quarterly	☐ Semi Annually ☐ Annually	
Month	Total Access Lines	ABD Originating Calls Form E-5146	Call Rate Col. C+B
A	B	C	D

Notes

Fig. 8—Monthly Originating Calls, Average Business Day, Form E-5147

Weighted Average Call Rate Sample Entities Under 500 Main Stations

E-5147

Company		State	Area	
Entity	Total Access Lines Form E-5147, Col. B	Originating Calls		Per M.S. Col. C÷B
		Annual Count		
		ABD Calls	Date	
		Form E-5146		
A	B	C	D	E

Notes

Fig. 9—Weighted Average Call Rate, Sample Entities Under 500 Access Lines, Form E-5148

TABLE A

DETERMINATION OF NUMBER OF ENTITIES TO BE SELECTED FOR ANNUAL COUNTS—ENTITIES WITH LESS THAN 500 TELEPHONES

TOTAL ENTITIES UNDER 500 TELEPHONES	NUMBER OF ENTITIES TO BE STUDIED		
	0 - 5%	6 - 10%	OVER 10%
1 - 4	1 - 4	1 - 4	1 - 4
5	4	5	5
6	5	5	6
7	5	6	6
8	6	7	7
9	6	7	8
10	7	8	8
11	7	8	9
12	7	9	9
12 - 14	8	9	10
15 - 16	8	10	11
17 - 18	9	10	12
19 - 20	9	11	13
21 - 23	10	12	14
24 - 26	10	13	15
27 - 29	11	14	16
30 - 32	11	14	17
33 - 35	11	15	18
36 - 38	12	15	19
39 - 42	12	16	20
43 - 46	12	16	21
47 - 50	13	17	22
51 - 56	13	18	23
57 - 64	13	18	24
65 - 72	13	19	25
73 - 84	14	20	26
85 - 100	14	20	27
101 - 120	14	21	28
121 - 150	15	22	29