SWITCHING SYSTEMS MANAGEMENT

NO. 1 ELECTRONIC SWITCHING SYSTEM

MEMORY ADMINISTRATION

TRANSLATION AREA

CONTENTS   **PAGE**

1. GENERAL

1.01 The purpose of this section is to provide the network administrator with recommended methods and procedures for the proper administration of the No. 1 Electronic Switching System (No. 1 ESS) program store (PS). An understanding of program store translation structure is a prerequisite to proper administration of this area. *Therefore, before reading this section, it is recommended that the network administrator become thoroughly familiar with the Translation Memory Organization.*

1.02 When this section is reissued, this paragraph will contain the reason for reissue.

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 Proper PS administration requires that memory be used efficiently and that space be available as required. Improper administration can cause early exhaust of PS space, which in turn could result in PS frame additions or costly memory rearrangements. Since each PS frame may cost from $80,000 to $100,000, proper administration is extremely important.

1.05 The PS memory at cutover has a finite capacity. The network administrator must ensure that this capacity will last through the end of the engineered period. This is done by management of the translations area of PS. Therefore, certain translation area administration goals should be recognized. These goals are based on the overall goal of ensuring the efficient use of the translations area of the PS and are as follows:

(a) To ensure accurate translations

(b) To conserve memory space

(c) To monitor the utilization of memory space

(d) To keep accurate records.

1.06 This section recommends certain routine and special tasks to be performed in administering translation memory. Five general checks are required for program store memory administration. These checks involve abbreviated codes, service order inputs, memory utilization, memory capacity, and translation form accuracy.

1.07 *The use of abbreviated codes (translation forms 1502/1503) is an important method of conserving words. For a new office, the abbreviated code objective for the cutover is 95 percent or better for both lines and directory numbers. The network administrator must strive to maintain as high an abbreviation level as possible. It is recommended that all subsequent main station additions to the office have at least an 80 percent overall abbreviation rate for all lines and directory numbers and 95 percent abbreviation efficiency for lines and directory numbers that can be abbreviated.* The network administrator should strive to achieve as great an abbreviation rate as is reasonably possible.

1.08 In order to maintain the objective percentage for abbreviation of main station additions, a *service order checking routine* should be initiated on a periodic basis. The routine verifies, via teletypewriter (TTY) messages, that additions going into the machine are being abbreviated. The service order routine also checks for frequently occurring new classes of service for which abbreviated codes are not already established. New codes should be incorporated for these situations.

1.09 *Memory Utilization* entails keeping track of used and spare memory. It also involves word usage as related to main station activity. That is, the average number of words gained or

lost due to service order inputs should not exceed certain limits. These limits are a function of the office subscriber features and equipment.

1.10 The *memory capacity* determination activity uses the data obtained from the memory utilization analysis and from marketing forecasts in order to project the time of memory exhaust. The results of memory capacity studies would indicate if sufficient memory exists to last to the end of the engineered period of an office.

1.11 *Translation forms* for the office must be kept current and must be accurately posted. Otherwise, any translation problems encountered may be difficult to resolve and large areas of memory may be used needlessly. All groups handling translation forms must ensure that their forms are accurate. *The network administrator is responsible for most translation forms.*

Organization of Section

1.12 This section is organized into five parts. Part 1 introduces the need for PS administration. Part 2 discusses the philosophy of PS administration. Part 3 introduces the methods and guidelines to be used for the various data-gathering procedures in administering the PS. Part 4 (see note at beginning of Part 4) contains the recommended step-by-step procedures and tasks to be performed and the analysis to be made in PS administration. Part 5 contains reproducible copies of all forms used in this section.

1.13 Table A lists and summarizes the network administrator's responsibilities for PS administration. Applicable paragraphs of this section are shown in parentheses on Table A.

2. PROGRAM STORE ADMINISTRATION PHILOSOPHY

ABBREVIATED CLASS CODES

2.01 Because of their importance in saving both PS memory space and machine processing time, the abbreviated class code records (ESS 1502 and 1503) call for special attention. The network administrator should decide what a reasonable level of abbreviations would be for the office. The terminology *abbreviation efficiency* is used for the ratio of *abbreviated* main stations divided by the *main stations that can be abbreviated.*

The terminology *overall abbreviation* is used for the ratio of abbreviated main stations divided by *all* main stations. (This terminology can be used either for originating or terminating class abbreviation percentages or for abbreviated originating plus terminating divided by the total originating and terminating classes.) *The recommended target is at least a 95 percent abbreviation efficiency and no less than 80 percent for overall abbreviation.* However, the targets are not fixed. As an aid in achieving a satisfactory level of abbreviation when manually checking abbreviation levels, some initial guidelines for eligibility may be set (for example 25 to 50 working lines in a class). This cannot be the only criterion. Consideration must be given to the size, type (class-of-service distribution), and growth pattern (declining, growing, or potential new classes and features) of the office. Declining or soon to be eliminated classes should not be selected for abbreviation even though they are above the guideline. Some codes may be reserved for services not yet offered (eg, custom-calling features) or assigned to a small but emerging group of lines (eg, TOUCH-TONE®) presently below the guideline. A "plain old telephone service" (POTS) office may later become a centrex office, or a residential office could develop a substantial amount of business service. Making maximum use of abbreviations, therefore, may be a long-term objective taking these possibilities and the restriction to 64 abbreviated codes into account. Twenty-one of the 64 abbreviated codes (for both originating and terminating classes) are preassigned in the program, leaving 43 available for assignment. Centrex abbreviations may be expanded using No. 1 ESS 1503 forms.

2.02 *The network administrator should initiate semiannual reviews (see 3.29) of the utilization of the abbreviated class codes and arrange with network maintenance to make any changes.* This activity may require making additions to the No. 1 ESS 1502A/B and No. 1 ESS 1503. In each case, the next available code number is used and the entries are made according to the instructions in Translation Guide TG-1A, Division 3, Section 5, in the same manner as initial assignments are made.

2.03 All in-service abbreviated code translation changes will be made by the central office plant forces via recent change and subsequent card writing. While abbreviated codes can be established

after the original assignments, any previously input line equipment numbers (LENs) or directory numbers (DNs) which fit the new code will remain unabbreviated unless reentered via recent change service orders. Conversely, any customers who have an abbreviated code which is intentionally or unintentionally discontinued will **lose service** unless the code is reentered. (System error messages will indicate when the No. 1 ESS locates a primary translation word (PTW) which has an abbreviated reference but no abbreviated expansion.)

2.04 *The network administrator should verify annually that the abbreviated code expansion table in translations matches the 1502/1503 forms.* The method is to request that network maintenance perform a T-read of the expansion tables and forward the output to network administration. The manually kept forms must be verified to ensure that they match what is in memory. If the manually kept forms and what is in memory do not match, the network administrator should determine which is in error and ensure that the discrepancy is corrected.

2.05 A formal routine for authorizing and verifying abbreviated code changes is the best way to ensure that inputs are correct, that records remain current, and that the records reflect what is in memory. Individual checks should be made for specific new or changed codes right after they are input to supplement the annual review. A T-read should be requested for the code's expansion. This check is made because if the code was input incorrectly, the classes which should have been abbreviated with the code will remain unabbreviated.

MEMORY

2.06 Memory capacity and utilization studies are required to ensure that the post-cutover spare memory areas are not wasted. There must be memory available for adding features and options and for growth in terms of centrex groups, wide area telephone service (WATS) facilities, tandem features, or dial-for-dial replacement of old working offices into No. 1 ESS during the engineered period.

A. Growth Considerations

2.07 When additional PS memory is required, it is frequently necessary to provide it in contiguous blocks based on subtranslator sizes.

Listed below are the major subtranslators and the memory required for each.

TRANSLATION WORDS	ITEM
1000	Per 1000 directory numbers (DN subtranslator—see note 2)
64	Line link networks
1024	Heavy usage line switch frames or circuits (LEN subtranslator—per pair—see note 1)
1024	Regular usage line switch frames or circuits (LEN subtranslator—see note 1)
32	Trunk link network
512	Trunk switch frame
256	Universal trunk frame
1024	Master scanner frame
256	Central pulse distributor pair
64	Rate and route chart columns

A detailed listing (by both location and size) of the PS subtranslator requirements is provided in Figure 1.

Note 1: Each heavy line switch frame (LSF) only requires 512 translation words. However, the program structure requires that a 1024 word subtranslator is the smallest block for LSFs. Therefore each subtranslator block for heavy LSFs represents translation words for two frames. If the office has an odd number of equipped heavy LSFs, 512 translation words are wasted. The next LSF to be added can, however, utilize these 512 words.

Note 2: The word counts given above and in Figure 1 do not necessarily include peripheral word requirements for the subtranslator. For instance, 1000 words are required for each new 1000-word block for a DN subtranslator. However, peripheral word requirements for auxiliary blocks need to be determined when considering total words. An overall abbreviation

of 80 percent means that 20 percent (or 200) of the DNs will require auxiliary blocks. Therefore, at a minimum of two words per block, 400 additional words will eventually be needed. In like manner, three additional words would be required for each unabbreviated LEN. This would result in 600 additional words for the LEN subtranslator's auxiliary blocks. This should be taken into consideration when word studies are made.

2.08 *If existing memory is to be used for a proposed addition, the blocks intended for the addition must be reserved. After reservation, care must be taken to maintain a record of the reserved space (location and size) and its intended use.* The network administrator should retain this information. Figure 1 may be used to determine present or future program store requirements. This must be closely coordinated with the network design engineer.

B. Trunk Activity Translation Word Usage

2.09 Except for growth jobs, trunking activity on a day-to-day basis should not ordinarily use up an appreciable number of words. There is little control that can be exercised to conserve trunk word usage as compared to the usage of abbreviated codes for lines. Unit type translators are most frequently affected by trunking activity. Words can be saved by making sure that only the necessary number of digits to be interpreted for a tandem trunk group be interpreted and that only required groups are assigned to tandem tables.

2.10 Some trunking activity items which may use an appreciable number of words include:

(1) Carrier group alarms or trunk make busy key entries

(2) Three- or 6-port conference trunk activations

(3) Activating new trunk groups

(4) Activating spare trunks or service circuits from trunk group 000.

These types of activities can adversely affect the words-per-main-station calculations in 4.02 and should be taken into account when they occur.

See Figure 1 for word determination of unit type translators.

C. Notes on Use of Words

2.11 Since few items require left-half addresses, the left-half words in translations tend to be underutilized (especially for offices that have been in service for a long time). The network administrator should ensure that left-half words are used as much as possible (see 2.13).

2.12 When an office is cut over and after a repack, the number of spare left-half 14-bit words should roughly equal the number of spare right-half 23-bit words. This is due to the design of the translation data assembler (TDA) for new offices and for existing offices due to the program known as translations repack to implement memory savings (TRIMS) and translations retrofit repack (TRR). The left-half spare words could thereafter be used less than the right half. Except in cases where vertical services (custom-calling features requiring right-half auxiliary blocks and left-half expansion words) are used extensively, the left-half words will be used very little in day-to-day activity.

2.13 If conditions arise which produce a shortage of right-half words and an excess of left-half words, then it may be possible for maintenance personnel to transfer certain subtranslators (which can be located on either half) from the right half to the left by using APT-03 Mod 5 program XCMP (see Division H, Section 6h[1]). Conversely, if a large number of left-half words are required for adding features or equipments to the office and an excess of right-half words exist, then some subtranslators could be moved to the right half.

2.14 The actual details of what should be done should be arrived at through discussions between the network administrator, network maintenance, and the network design engineer since the moving of subtranslators is a time consuming and very delicate operation. The items marked *either* on Figure 1 may be moved.

2.15 Sometimes situations occur, such as in growth jobs, where spare words may not be available in sufficient-sized blocks but a number of smaller-sized blocks exist. If such a case occurs, merging adjacent blocks into larger blocks could be tried. This merger would require a network maintenance procedure to determine which holes are adjacent

and to link adjacent holes. This procedure, however, is tedious and is recommended only in emergencies. A TRIMS or TRR run may be more desirable if time permits. *When considering word availability it should be kept in mind that there are actually only half as many left-half 23-bit translation words available as are shown on the verify space summary form which lists only 14-bit words since a left half 23-bit translation word uses 14 bits of one program store word and 9 bits of the next word.*

D. Notes on Use of Modules

2.16 In order to best utilize words, it is recommended that as many spare modules (mods) as practical be left off the list of available space. Only one full spare mod should be linked at any one time. The next spare mod should not be added until the first mod is over half used.

2.17 If all spare mods were linked, the No. 1 ESS unit could randomly use words as it needed them from any available mod. To do so would have the effect of scattering small quantities of used words over a large quantity of spare words, thereby causing all mods to be updated when a card write occurs. Consequently, the network administrator would be required to keep track of more words than is necessary and update time would be wasted.

2.18 The method of balancing word usage for left- and right-half words should be used to force the system to use spare mods efficiently and to pack word usage as much as possible. In other words, if a major imbalance of left- and right-half words exist (and there is a shortage of right-half words), it would be better to move some *either side* subtranslators to the left to gain words rather than open a new module to the link list. However, this decision must be preceded by an analysis of why this is occurring.

E. Corrective Action By Use of Support Programs

2.19 Data processing support programs are available for the purpose of correcting errors or recovering space in PS prior to completion of an engineering period.

2.20 Errors can be introduced into the system either as a result of human oversight or machine malfunction. These errors cannot always be detected in time for easy corrective action to be taken. In such cases, the support programs can be invaluable tools in researching and correcting problems.

Translation Area Analysis

2.21 The translation area analysis (TAA) is used for research or diagnosis of translations area problems. It is also the preliminary processing program for the TRIMS or TRR run.

2.22 When requested via an E-8086 questionnaire, Western Electric Company (WECo) schedules and performs the TAA operation. A module of PS is replaced by the Mod 5 APT-02 program. The automatic message accounting recorder is used to record the translation area on magnetic tape. (Other methods are sometimes used to send a copy of translations to WECo which include reading the translation data via computer data link or by submitting a duplicate copy of each translation mod.)

2.23 The tape is processed by the WECo regional office with an objective of returning it in one week. The analysis consists of several sections. One is a listing of "holes" which have been lost to the link list. With this listing, network maintenance may be able to restore some of this space to PS. *Because this listing could help to avoid the necessity of adding another PS, a TAA should be scheduled before writing any general addition.*

2.24 The TAA is also useful in determining the abbreviation efficiency of the office. A summary listing of all abbreviated codes (POTS and centrex) used by the office, the number of lines using each code in the listing, the total abbreviated, the total unabbreviated which could be abbreviated, and the total unabbreviated which cannot be abbreviated are all included in the TAA output. Replicas of the recovered 1500A, 1502A, 1502B, and 1503 forms are also printed.

2.25 A manual in-depth analysis of lines or numbers requiring auxiliary blocks can be made by examining the auxiliary blocks for similar entries. However, this manual method is tedious, time consuming, and requires a good knowledge of both the translation structure and the TAA output organization. When similar blocks are noted,

the octal data words can be expanded to binary and the bit positions checked against PA 591003 to determine their class and features. It may be decided at that time to add a particular combination of class and features to the abbreviated class code list.

2.26 Examination of the auxiliary blocks being used will also help in determining the size block most commonly used in a particular office. This will assist in breaking up odd-sized blocks of memory into commonly used blocks.

Translation Repack to Implement Memory Savings

2.27 The TRIMS program replaces the manual TAA analysis effort for determining which classes of service can be abbreviated. The program can also be used to eliminate the manual effort required to build new abbreviated codes for frequently occurring unabbreviated classes. The program has the options necessary to:

(1) Abbreviate all classes that can be abbreviated

(2) Abbreviate classes in a hierarchial pattern, reserving some abbreviated codes for future use

(3) Unabbreviate little-used classes as specified by the requester

(4) Re-engineer head table sizes to more accurately reflect office requirements.

2.28 Upon completion of full TRIMS processing, the translations data are repacked. The new translations update modules produced by the system can be loaded into the machine. Computer printouts of the new translation information should be retained by network maintenance, the network administrator, and network design engineering.

2.29 The TRIMS printout will contain the following:

(a) The quantities of LENs and DNs assigned against each abbreviated code, reflecting the quantity of PS words that have been saved, the percentage of abbreviation efficiency, and the overall office abbreviation percentage in this TRIMS run.

(b) The ESS 1502 A/B and ESS 1500 forms that *must* be used by the network administrator to update the administrative office records.

(c) The ESS 1500A form that *must* be used to update the administration of office records.

(d) A multiline hunt group analysis which displays terminal numbers of the multiline hunting group which are located in the same concentrator.

2.30 The TAA gives a functional listing of the original translations data before repack along with its diagnostic information. The TRR and TRIMS produce a functional listing of the translations data after repack.

Translation Retrofit Repack

2.31 The TRR is a process by which existing translations are repacked into the smallest possible area, thus eliminating the holes referred to in previous paragraphs. Almost all spare words are contained in the 32-or-greater hole category after the run is finished.

2.32 The TRR also includes the error analysis contained in the TAA; it involves the remagnetizing of PS cards which must then be shipped back to the No. 1 ESS unit. It does not, however, change the abbreviation status of the office. When retrofitting a new generic program in which module requirements exceed the existing program, a TRR can be used to relocate translation data in order to vacate modules needed by the retrofit generic program.

2.33 *If an office is to be repacked, it is recommended that serious consideration be given to using TRIMS for the repack.* The incremental cost of TRIMS when run with a TRR is very low. If the abbreviation efficiency is low (90 percent or less), a TRIMS with repack should be run instead. A TRIMS run is optional if the office abbreviation efficiency is between 90 and 95 percent and is not necessary if the office abbreviation efficiency is 95 percent or greater.

2.34 *The TRR and TRIMS runs require that no card writing be done during the processing interval. The new mods obtained from these runs will replace all active translation mods in PS and will reflect only the translation structure at*

the time that the translation area was copied. Hence, any card writing of recent changes made since the area was copied would be lost. Close coordination is important to preclude the possibility of filling the recent change area of call store before incorporation of the new memory cards from these runs.

Translation Area Analysis/Translation Repack to Implement Memory Savings/Translation Retrofit Repack Cost Estimates

2.35 The data processing cost of running a TAA, TRIMS, and/or TRR depends upon the size of the translations area (ie, number of modules), the number of lines and trunks, and whether or not structural errors are detected while processing the programs. If structural errors are detected, the operating company can save a portion of the error correction costs if the company performs the error analysis and correction itself.

2.36 The data processing costs do not include any associated operating company costs related to the preparation of the necessary forms, obtaining a copy of the translations area, or installation of the newly repacked translation modules. Actual cost estimates for these runs can be obtained from WECo before a decision is made whether or not to have the runs made.

2.37 Economic justification for the runs depends upon the anticipated number of words to be regained or the future savings of words resulting from the use of new abbreviated codes. A minimum of from 10,000 to 13,000 translation words must be recovered before the advantages outweigh the costs. Although TRIMS can only recover right hand words, TRR will adjust the words saved to right and left half. If there are structural errors in translations, the total words required for justification can be subjectively reduced since the errors should be corrected anyway.

2.38 Since the number of active modules should be fewer after a TRIMS or TRR repack, some work effort savings will be realized in updating translations during card writing. These savings are approximately 0.5 employee hours per recovered module per update.

2.39 *A PS addition should not be planned until assurance has been obtained that maximum efficient use of all existing PSs has been accomplished.*

3. ADMINISTRATIVE PROCEDURES

GENERAL

3.01 This section provides background information for specific tasks in memory administration. The clerical details of these tasks and the network administrator's analysis of the results are described in Part 4. A general knowledge of why the tasks should be performed plus some insight into the mechanics of them is presented in 3.03 through 3.46 (with spare memory covered in 3.03 through 3.19 and abbreviation covered in 3.20 through 3.46). *The network administrator must understand the reasons behind the tasks even though the majority of them can be performed by clerical personnel.* If any problems occur during the tasks, the background information provided in the following discussion plus the information contained in 2.01 through 2.39 should be helpful in resolving them.

3.02 The following documents will provide additional information:

PA-591003, Translation Output Configuration

IM-1A001, Input Message Manual

OM-1A001, Output Message Manual

Bell System Practices, 231 and 820 Series Practices

Network Design (Traffic) Order

PA-1A500, Auxiliary Program Reference Guide (MOD 5)

TG-1A, Translation Guide

PA-591001, Office Parameters

PA-591092, Translation Area Analysis and Retrofit Repack.

In any case, network maintenance or the technical assistance center (TAC) may be contacted for assistance.

VERIFYING PROGRAM STORE SPACE

A. Philosophy

3.03 As service order disconnects accumulate,
holes are created in memory equal in size
to the auxiliary block used by the disconnected
line. When a connect service order that requires
an auxiliary block is input, the system will attempt
to match its auxiliary block requirement with an
existing hole. If no hole of the exact size exists,
a memory block of the required size will be chopped
from the remaining large block. *Just before
cutover, before (and just after) writing
any general addition, and once each month
thereafter the network administrator
should obtain and examine a hole table
printout.* The hole table should change very
little from month to month if the proper percentage
of lines is abbreviated. *If a significant change
appears on the hole table without explanation
(ie, no new major feature or service
added), there is a possibility that the
link list has been broken and one or
more holes have been "lost." Network
maintenance should be notified immediately
because this situation may cause serious
service problems.*

3.04 There are several reasons for a monthly
verify space check (task 1, 4.01). Errors
can be corrected more easily before card writing
(usually done monthly) if the error occurred since
the last card write. By using the monthly count
of main stations, a good ratio for determining the
rate of word usage can be calculated (in terms of
average word usage per main station) which can
be directly related to month-to-month abbreviation
efficiency (see Notes 1 and 2 below). Having
up-to-date spare memory capacity information for
use in answering network design engineering and
marketing questions for feature additions is also
an advantage.

> *Note 1:* All offices should strive to keep
> at least their present level of abbreviation.
> A 95 percent office should remain at 95
> percent. *Lower percentage-abbreviated
> offices should at least maintain their
> percentage and strive to improve it.*
> Offices that are decreasing in abbreviation
> efficiency will use an abnormal number of
> words per main station. *Low- or zero-growth*
> offices should use no more than ten right-half

words per main station gain with a goal of
no more than two right-half words used per
main station gain. *Moderate-growth* offices
(100-station gain per month) should use no
more than three right-half words per main-station
gain with a goal of two. *High-growth*
offices should use no more than one right-half
word per main-station gain. Offices declining
in main stations can be categorized as low-,
moderate-, and high-loss offices. These should
gain words per main-station loss in the same
numbers as for the word losses for main-station
gains in this note.

> *Note 2:* The left-half word usage per main
> station figure is not as valuable as right-half
> words per main station in determining abbreviation
> efficiency since there are no left-half auxiliary
> blocks. However, high word usage per main
> station on the left would be symptomatic of
> a large number of speed-calling customers or
> either-side subtranslators being added. A
> left-half word usage of much less than one
> word per main station would normally be
> expected.

3.05 A critical part of determining word usage
per main station requires the elimination of
maintenance recent change activity that has no
relation to service order activity. The network
administrator should discuss this problem with
network maintenance to determine the best means
of tracking this activity. A log of all such seizures
or releases of memory blocks during normal activity
is the preferrable method. Then, when the spare
memory checks (task 2, 4.02) are made, the network
administrator is able to obtain and compensate for
the total number of words used (or gained) by
maintenance since the last memory check.

3.06 Main station growth versus word usage
percentage calculations (task 3, 4.03) and
percentage of utilization of words calculations
(task 4, 4.04) are made for trending purposes.
At the beginning of an engineering period a certain
number of spare words exist and a certain amount
of main station growth is anticipated. *The
percentage of remaining PS spare words
versus the percentage of expected main
station gain should coincide or at least
the percentage of words left must be
greater than the percentage of main
stations left. If this is not the case, the
possibility exists that there are not enough*

spare words for the remaining main stations to be added.

Note: The main-station growth versus word usage procedure is to be used for growth offices only. Growth offices tend to use up words much faster than zero-growth or declining main-station offices, thus creating the need for a trending calculation. Zero-growth or declining station offices need only be checked for word losses or gains using task 2 in 4.02. *No words should be used when there are main-station losses unless the overall abbreviation percentage is declining. Significant amounts of word usage in a declining office should be investigated and justified.*

3.07 PS capacity studies should be made at the beginning of the engineering period (or at least once per year) and again at least as often as the marketing/commercial forecasts change from those used in the network design order for the period. The goal is to verify that enough PS spare words are available to cover the period. If enough spare words are not available, corrective action in terms of TRIMS/TRR runs, PS interim additions, establishment of additional abbreviated codes, or cessation of custom-calling feature may be required. The network design engineer should have up-to-date PS worksheets filled out for the engineered period in order to determine if the existing PS meets the needs of the period. These worksheets must be reviewed and any areas of conflict resolved before the period begins. A quick method is described in task 5 in 4.05.

B. Input Messages

3.08 The mechanics of verifying available space in the PS translations area (task 1, 4.01) involve a series of TTY input messages. One basic input message is used:

VFY-SPACE-29 b cc d.

The output message response to this input will yield information pertaining to the link list of variable left-side (b=1) or right-side (b=0) PS space. Depending upon the variable d, the output message will either show a specified block length cc and the number of available spare blocks of that length or show the actual starting address(es)

of all the block(s) with length cc. The permissible values of cc are within the range of 01 through 33.

Where:

$$cc = Meaning$$

01 to 31 = length of block (hole size)

32 = all blocks ≥ 32

33 = all block lengths 01 through 32 (for SP/CC-CTX-5 and later generics)

3.09 The type of request d can be either 0 or 1

Where:

0 = quantity of holes of size cc

1 = list the starting address of each hole of size cc or all sizes (cc=33)

3.10 For example, the message

VFY-SPACE-29 0 08 0

will output the quantity of 23-bit word right-side holes (in octal) of size eight (ie, total available unused 8-word areas of right-half translation words).

The message

VFY-SPACE-29 0 08 1

will output the PS starting address for each of the right-side holes of size eight.

3.11 If the message contained a one instead of a zero in the b position, the 14-bit left-half hole quantities or addresses would be shown on the output.

3.12 To determine the quantity of holes of each size, one of two options could be exercised. The first option requires 32 input messages for each half with the format VFY-SPACE-29 0 (or 1) cc 0. The cc position would change with each input and would increment from 01 through 32. After each input, a corresponding output would be produced and then the next input could be made. This option is very time consuming for the TTY operator.

3.13 The second option (for CTX-5 and later or other generics which have the feature) requires only one input message for each half. The cc position would contain 33. The output would then list each hole size and quantity from 1 to 32.

3.14 Note that for either method, the quantity of holes greater than or equal to 32 gives no indication of exactly how many spare words are involved. Another input is required to determine these remaining words. The message is

<div align="center">VFY-SPACE-29 0 32 1</div>

for the right side and

<div align="center">VFY-SPACE-29 1 32 1</div>

for the left. These messages will cause an output that will list the starting address and length for each size 32-or-greater hole.

3.15 By using these various options of the VFY-SPACE input message, the following information can be either obtained or derived:

    (a) How many holes of a particular size exist

    (b) The starting address(es) of a particular hole size

    (c) The quantity of holes for every hole size

    (d) The starting address and length of each hole size 32-or-greater

    (e) The starting address(es) of all hole sizes.

3.16 Items (c) and (d) in 3.15 are used to tabulate the number of spare PS translation words. Item (a) can be used either to verify a questionable verify-space output for a particular hole or to determine if a sufficient quantity of spare blocks is available for some new applications. Items (c) and (d) would normally be used for diagnostic purposes by network maintenance.

C. Output Message Format

3.17 The basic output message formats in response to the various VFY-SPACE input messages take the forms shown in Table B and Figures 2 and 3.

Note: If at any time there are exactly three lines of data after the TR13 line, this indicates that there is an error in the link list and that space has been lost. The first two lines are the addresses where the linking error was found. The last line is the number of blocks in which the error occurred. Network maintenance personnel should be contacted to correct the error as soon as possible in order to recover any lost space and to prevent possible serious service problems.

3.18 Time-outs can occur when verifying space (see Dial Facilities Management Practices, Division H, Section 6d(4), TTY Operation and Use). The time-outs may result from an excessive number of a particular size hole. Refer the problem to network maintenance.

3.19 The recommended procedures for determining spare words, word usage/main station, growth versus word usage, percentage of utilization, and period capacity are given in 4.01 through 4.05.

CHECKING AND IMPROVING ABBREVIATION

3.20 There are three basic recommended procedures for ensuring proper use of abbreviated class codes:

    (1) A procedure for weekly or daily samples of new or changed service orders is performed whenever conditions warrant it.

    (2) Particular attention should be given to assignment procedures and recent change input for centrex and multiline accounts.

    (3) A semiannual review for the percentage of abbreviation should be made.

3.21 In all three of the checks mentioned in 3.20, a fourth procedure for determining the abbreviation status of a subscriber is required. The procedure is common to all three basic procedures and is called the procedure for interpreting primary translation words (PTWs).

    Note: If a TAA or TRIMS run is made to check on or improve abbreviation, the codes listed on the outputs should be reviewed for zero user codes. Zero user codes may be the result of input errors or illegal codes.

A. Daily/Weekly Service Order Sample for Abbreviation

3.22 The goal of this check is to *sample* 10 percent of the orders (with a minimum of 14 orders) at random and determine if at least 80 percent of the input is being abbreviated. Records are to be kept on the abbreviation percentage for the sample and on the classes of service that are *not* being abbreviated.

3.23 The checks may be made daily or weekly depending upon the amount of new or changed service orders being processed. If a large number of service orders are processed per week (more than 500 orders) orders should be checked daily to keep the number of orders checked at any one time low. If a small number of service orders are processed per week (100 to 500 per week) orders should be checked weekly to obtain enough orders for the sample to be valid.

3.24 These daily/weekly checks can be used as follows:

(a) To detect consistent service order input errors for assignment records

(b) To obtain data for determining possible causes of abnormal word usage per main station

(c) To obtain additional data after the semiannual review for the purpose of selecting candidates for abbreviation

(d) To verify that abbreviated class codes for a newly cut over office are adequate.

3.25 The first three uses listed in 3.24 are diagnostic and corrective in nature. The fourth use is helpful, during the first two to six months of service, for new No. 1 ESS units where the original abbreviated class codes are selected based on predicted office characteristics. *The data used for prediction must be verified with actual office abbreviation activity for the first months of service.*

3.26 *A daily/weekly check for abbreviation should be made when one or more of the following applies:*

(a) If the office is newly cutover, daily/weekly checks should be performed for the first

two months or until the semiannual review for the percentage of abbreviation is completed.

(b) If word usage per main station exceeds one for high-growth offices (two for moderate- or low-growth offices) for three consecutive months, a random sample of orders from the past two weeks should be checked. Checking should be continued for at least four additional weeks or until the problem of high word usage is resolved.

(c) If word usage per main station exceeds three for high- or moderate-growth offices (ten for low-growth offices) in any one month and cannot be accounted for, a random sample of orders from the past two weeks should be checked and checking should continue for at least three weeks or until two successive months of word usage are less than the guidelines for low-, moderate-, and high-growth offices.

(d) If the semiannual review indicates a need for additional abbreviated class codes.

(e) If an unexplained loss in words occurs while a corresponding loss in main stations occurs.

3.27 The procedure to be used for daily/weekly abbreviation checks is given in 4.07.

B. Abbreviation for Centrex and Multiline Accounts

3.28 Because of the potential major impact that centrex and multiline hunt groups can have on PS space, close attention must be paid to the initial inputs of the service orders for these services. No specific recommendation on the verification tasks to be followed is made in this section. *However, it is recommended that each operating company set up its own procedures that will at least cover the general guidelines that are set forth below.*

(a) For each supplemental abbreviated code to be used by the centrex customer or centrex multiline hunt group the codes should be verified to have been input correctly using the method referenced in 2.04. The customer facilities assignment office should input one test service order for each line class code used for the account. The network administrator should then verify that the order has gone into recent change as abbreviated. The procedure for interpreting

primary translation words (4.06) can be used for the verification. The remaining orders should not be put in until the verification is complete. A minimum of three words is saved per station.

(b) At least 95 percent of all abbreviatable centrex inputs that are being abbreviated should be ensured by keeping track of the percentage of centrex lines which are not abbreviated.

(c) That full thousand directory number assignments for centrex-CU are assigned to the DN head table rather than building a new thousand block DN subtranslator should be ensured. One thousand words are saved per subtranslator.

(d) Station number assignments for centrex-CO accounts should be grouped in blocks and at least in the same thousand series. This method of number assignment will limit the number of digits to be interpreted. Each level of interpretation requires 15 words per digit to be expanded.

(e) Centrex and large multiline hunting group additions must be planned carefully and all features and options that apply must be tested. The test lines in (a) above may be used for this check.

(f) The number of digits to be interpreted on the 1109 form should be minimized. Fifteen words are saved per interpretation level.

(g) For series completion groups, sequential directory number reservations for future hunting lines should be used instead of nonsequential (jump-hunt). Three words are saved per line if the numbers are consecutive. (Remember the numbering is 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.)

(h) Individual lines and series completion groups should not be special billed to a DN via translations. Billing should be performed by the accounting computer programs. Four words may be saved on each line.

C. **Semiannual Review of the Percentage of Abbreviation**

3.29 At least every six months, a review should be made of the percentage of abbreviation for both the new and changed orders being processed and for the overall office. It is recommended that

the review cover a 1 or 2 week study (depending upon office size) of **all** service orders. In large offices and in small offices with large service order activity, a 1 week study will generally suffice. Small office and large offices with relatively little service order activity will require a 2 week study in order to accumulate enough orders. New offices should also use a 2 week study. The results and data obtained from the daily or weekly samples will be very useful in this review.

INTERPRETING PRIMARY TRANSLATION WORDS

3.30 The following discussion should be used as background information for the procedure given in 4.06 for use in interpreting the abbreviation status of a service order. The method is common to all three stages or tasks in making abbreviation checks.

3.31 If the PTW in a LEN or DN subtranslator contains zeros in its leading three bits (bit positions 22, 21, and 20) the PTW is a pointer to an auxiliary block and therefore is not abbreviated. A simple reading of the PTW for the LEN or DN will therefore show whether the originating or terminating class words use abbreviated codes.

3.32 The network administrator can determine the contents of the LEN and DN PTWs by using input messages on the network administration TTY. Two types of input messages are required:

TAG-aaa-bbbbbbb(b) and VFY-PSWD-28 ccccccc.

3.33 Different methods are required for interpreting PTWs for abbreviation depending on whether the PTW is a right-half or left-half word. If, however, a permanent recent change has been input, the method is the same.

A. **Use of TAG Message**

3.34 The TAG message is used to determine the PTW address for the LEN or DN. TAG-LEN-bbbbbbbb is used for LENS and TAG-DN-bbbbbbb is used for DNs,

where:

bbbbbbb(b) is the LEN or DN in operation.

3.35 The TAG-LEN input message will have a TR19 output message response which will

give the address of the PTW for that LEN. Figure 4 shows an example of one such input/output and also shows the meaning of each line.

3.36 The TAG-DN input message will have a TR20 output message response which will give the address of the PTW word for that DN. Figure 5 shows an example of one such input/output and also calls out the meaning of each line.

B.   Use of VFY-PSWD Message

3.37 The VFY-PSWD input message uses the address from the TAG message for obtaining the LEN or DN PTW. The response to this input is a TR34 output message which will show the contents of the LEN or DN PTW plus any recent change information against that PTW. Figure 6 shows examples of the various input/output combinations for LENs or DNs with and without recent changes.

3.38 Note that when multiple recent changes have been entered against a PTW address there can be only one effective permanent recent change (see Notes 1 and 2 in Figure 6). This results from the fact that the first permanent change will have its status changed to delete when a new permanent change is made. On rare occasions, there can be a maximum of three permanent recent changes in call store. This situation can occur when the recent change area is "frozen" just before a card write. The recent change area should not be frozen for more than a day. The ambiguous problem can be avoided by not doing PTW checks just before card writes or by waiting until just after the card write for any such TR34 messages. Network maintenance should be contacted to find out if the area has been frozen.

3.39 Since the left-half translation word is contained in two consecutive left-half addresses, it is necessary to do two VFY-PSWD inputs in order to obtain the full PTW. The second address read will be used to determine abbreviation status. However, it is not correct to read only the second address. The first address must be read to determine if there are any permanent recent changes (the recent change is always applicable to the first, or even, address of a left-half word). If there are no permanent recent changes, the second address can be read. If there is a permanent recent change, the second address does not need to be read. This is because the data in the last

line of the applicable TR34 recent change message will contain the entire contents of the new intended PTW whether it be left or right.

C.   Interpreting Right-Half Primary Translation Words (Without Recent Change)

3.40 If the TAG output address shows a 1, 2, or 3 in the leading digit, the address is for a right-half word. When the content of the PTW is determined via the VFY-PSWD input message, the first two left adjusted octal digits of the PTW are used to determine abbreviation status. In general, from left to right, if the first number is zero and the second digit is less than four, the LEN or DN is *not* abbreviated. Otherwise, it is abbreviated. In other words, *if the first two digits are 00 through 03, the LEN or DN is not abbreviated. If the first two digits are 04 through 77, the LEN or DN is abbreviated.* (Actually, the first two digits should never go beyond 37; therefore 40 through 77 should never appear.)

3.41 Figure 7 gives examples of how to interpret right-half PTWs without recent change.

D.   Interpreting Left-Half Primary Translation Words (Without Recent Change)

3.42 If the TAG output address shows a 5, 6, or 7 in the leading digit, the address is for a left-half word. Therefore, two VFY-PSWD inputs are required: one for the address of the TAG output, and the other for the next higher octal number address. That is, if the TAG output shows 6315110, it and 6315111 must be verified.

3.43 If the first VFY-PSWD output shows no recent change, the next address is verified. The PTW obtained from the second verify will determine the abbreviation status. *If the third PTW digit from the right is a zero, the LEN or DN is not abbreviated. Any other number (one through seven) indicates that the LEN or DN is abbreviated.*

3.44 Figure 8 gives examples of left-half PTW interpretation.

E. Recent Change Interpretation (Right-Half and Left-Half)

3.45 If there is a permanent change, the last line of the TR34 with the permanent recent change indicator should be interpreted in the same manner as the method for right-half PTWs (that is, if the first digit is zero and the second is less than four, the LEN or DN is *not* abbreviated). See Figure 9 for recent change examples.

F. Primary Translation Word Interpretation Procedure

3.46 The recommended step-by-step procedure for interpreting PTWs is given in 4.06. This procedure is used for all abbreviation check tasks.

4. PROGRAM STORE ADMINISTRATION TASKS

Note: It is intended that this part be used for the day-to-day tasks to be performed by clerical personnel and for the analysis/corrective actions to be done by the network administrator. The preceding three parts were intended to provide an overall understanding of the PS administration philosophy and also to provide background information on the tasks and goals of PS administration. However, problems may arise which require that the preceding parts be reviewed in order to resolve the problems.

DETERMINATION OF WORD USAGE

A. Task 1: Determining Spare Program Store Words

4.01 The following periodic procedure is recommended for determining the number of spare translation words in PS.

(a) The task should be scheduled to coincide with the periodic (example: monthly) count of main stations.

(b) Forms PSVFY-1, 2, 3, and 4 should be obtained. The top part of the forms must be completed if they have not already been completed. The date on which the verify-space output is obtained should be filled in.

(c) *A time period should be set up and agreed upon with network maintenance for inputting verify-space messages via the network administration TTY.* The activity should occur during a slack office period

so that it will not interfere with recent change inputs by plant or with TC15 output. Early morning is a desirable time for inputting verify-space messages.

(d) At the scheduled time, type in:

VFY-SPACE-29 1 33 0. (1)

and wait until all output messages are received.

(e) Do the same for the next three input messages:

VFY-SPACE-29 1 32 1. (2)
VFY-SPACE-29 0 33 0. (3)
VFY-SPACE-29 0 32 1. (4)

Note 1: If an input error is made and not detected until after the command was accepted, exercise the V-STOP (CTX 7, Issue 2.1) input option (See input message manual IM-1A100).

Note 2: For messages (1) and (3) above there will be 32 TR13 output messages each.

Note 3: For messages (2) and (4) above the output messages will consist of ten line blocks. The end-of-message can be detected when two or more consecutive lines contain zeros.

Note 4: See Figures 2 and 3 for examples of outputs expected.

(f) After all outputs are obtained, tear off the outputs and convert the octal data into their decimal equivalents (using Table C or Table D as appropriate) as is shown in Figure 10.

(g) After octal-to-decimal conversion, transfer the decimal equivalents to forms PSVFY-1 (for 31-or-less blocks) and PSVFY-2 (for 32-or-greater blocks) for both left- and right-half words as shown in Figures 11 and 12, respectively. Also enter total word blocks for the right-half and the left-half at the top of the form on the line designated (total blocks).

(h) Total the data recorded in the (block size) portion of form PSVFY-2 and transfer the total to form PSVFY-1 line *32+* for both the right-half and the left-half words respectively.

(i) Multiply the quantity of holes on PSVFY-1 by the hole size for each of the less-than-32 sized holes and record the results in the *total spare* column.

(j) Total lines 1 through 31 (right side) and 2 through 30 (left side) of PSVFY-1 and enter the total in lines *1-31* and *2-30* respectively.

(k) Total line *1-31* and *32+* of PSVFY-1 and enter on line *1-32+* (total right). Also total line *2-30* with *32+* and enter on line *2-32+* (total left).

(l) Subtract the present *1-32+* from the previous *1-32+* of PSVFY-2 and enter on line *change.* Do the same to determine left change.

(m) If any problem arises, enter a "see note" reference in the space provided on PSVFY-1 and enter the condition on the PSVFY-3 form (see Fig. 13). Contact network maintenance to determine the cause of the problems. When the problem is resolved, record the cause and the corrective action taken.

Note: Since there should be no odd-sized holes for the left-half words, if an odd-sized hold appears, contact network maintenance immediately for corrective action.

B. Task 2: Determining Word Usage Per Main Station

4.02 Having obtained the total linked spare left- and right-half words and the change in words since the last report, the average words-per-main-station usage can be determined. The following procedure is recommended.

(a) Record on line A of form PSVFY-4 the total main stations in service as obtained from the main station count.

(b) Subtract the new main station count from the old and enter the change on line B.

(c) Transfer (from form PSVFY-1) the change-in-words for right- and left-half words onto lines C and F, respectively.

(d) Obtain from network maintenance the right- and left-half word usage due to plant activity and enter on lines D and G, respectively.

(e) Subtract plant activity (D and G) from the gross right (C) and left (F) change, respectively. To subtract positive and negative numbers, change the sign of the quantity to be subtracted and then add the two numbers (this is called algebraic subtraction). Figure 15 shows the four combinations for subtracting positive and negative numbers

Note: If the word change is positive (a word gain) and the main-station change is negative (a main-station loss), or vice versa, perform the following step. If both are positive or both are negative, perform the words-per-main-station calculation, enter a "see note" reference, and explain why (if known) this condition occurred on the PSVFY-3 form. Words normally would be lost when main stations are gained (and vice versa). However, some conditions could arise that could alter this. For example, if a number of speed-calling customers were input and a larger number of POTS customers without special features were taken out, a net loss could occur in the main stations at the same time that words are being used. It is possible to gain words when gaining main stations if the abbreviation efficiency for the month is greater than the overall efficiency of the office. Word gains with main station gains are desirable. *However, if a word loss occurs with a main-station loss, further investigation is required.* If a word loss occurs with a main-station loss, total the word change for the previous six months to obtain a net total word usage and divide this net total word usage by the net total main-station gain for the same period. If there is still a word usage loss with a main-station loss or if word usage exceeds the guidelines in (g) below analyze the cause and take corrective action (a daily/weekly abbreviation check may be required). Causes could be high levels of unabbreviated change or new service orders (less than 80 percent abbreviation or greater than a 10 percent difference between that month's abbreviation efficiency and the overall office efficiency), broken link lists, lost memory in PS (an APT-03 Mod 5 run may be required), or record-keeping errors.

(f) Divide the net word change (E and H) by the main-station change (B) for right- and left-half words to obtain **word change/main-station change** and enter the result on lines X and Y, respectively.

(g) **Left-half word usage should be less than one word per main station.** A sudden change could indicate a broken link list or lost memory. Check any abnormal condition with network maintenance since some network maintenance activity may have been forgotten.

(h) If the word change per main-station change (see notes following 3.04 and 4.02[e]) for the right-half is:

    (1) A loss greater than one for high-growth offices

    (2) A loss greater than three for moderate-growth offices

    (3) A loss greater than ten for low- or zero-growth offices

    (4) A loss with a main-station loss

investigate the cause and note the problem on the PSVFY-3 form. Enter a "see note" reference on the PSVFY-4 form (see Fig. 14 and 16). (A daily/weekly check may be required. See 3.26.)

    (i) If the guidelines in (h) are not exceeded, then ensure that the guidelines in 3.26(b) have not been violated. Take action as required if the guidelines are exceeded.

C. Task 3: Percentage of Main Station Growth Versus Percentage of Spare Translation Word Use

4.03 This procedure requires the use of the following:

(1) PSVFY-4 form

(2) Marketing forecasts for main station growth

(3) The number of spare words available (from both linked and unlinked mods) at the start of the engineered period.

Figure 14 may be used as an example/reference.

(a) At the start of the engineering period, obtain the marketing forecast for main-station growth for the period and enter the amount on line J of the PSVFY-4 form.

    Note: If the forecast is zero growth or declining main stations for the engineering period, then this procedure is not required. Track word usage using tasks 1, 2, and 4 only. However, if the forecasts change during the period to indicate growth, initiate this task at that time.

(b) Perform a verify-space on the day that the engineering period starts. By using task 1, determine the spare right- and left-half words that are linked. Multiply the number of unlinked modules times 8192 and add the result to both the right and the left spare linked words.

(c) Add the total linked and unlinked spare right words obtained in (b) to one-half the total linked and unlinked spare left words (also obtained in [b]) and enter the result on line O of the PSVFY-4 form.

(d) Determine the total number of main station additions since the start of the period by totaling all entries on line B of the PSVFY-4 form since the period began and enter total on line I.

(e) Divide line I by line J and multiply by 100 to obtain the percentage of forecasted main stations that have been input. Enter result on line K.

(f) Determine the cumulative right-half words used since the beginning of the period by adding together the right-half change (line C) for the months since the period began and enter the result on line L.

(g) Add together all entries made on line F since the period began, divide this sum by two, and enter the result on line M. (This obtains the total 23-bit left-half translation words used since the beginning of the period.)

(h) Add lines L and M and enter the result on line N.

(i) Divide line N by line O and then multiply the result by 100. Enter this total on line

P (percentage of spare translation words used to date).

(j) Compare line P to line K. If line K is greater than line P, enter "yes" on line Z. If it is not, enter "no".

(k) If line Z contains a "yes", then all is satisfactory. If it contains a "no", then the words remaining may not last to the end of the period. Enter a "see note" reference next to the "no" and indicate on the PSVFY-3 form (see Fig. 14 and 16) that a problem does or does not exist. If a problem does exist, research the cause and/or determine if sufficient capacity remains. Task 5 in 4.05 may be helpful in determining how many spare PS words are available.

D. Task 4: Percentage of Utilization of Words

4.04 The following procedure is recommended for determining the percentage of utilization of words on a periodic basis. Use the PSVFY-5 form. The steps given in (a) through (e) below are required only at the start of the engineered period or when there is a PS growth or generic change.

(a) Multiply the number of PS frames in the office by eight and enter the result on line A as shown in Figure 17.

(b) Enter the generic program type for the office on line B.

(c) By consulting Table E, enter the number of modules required for the program and parameters on line C.

(d) Determine the quantity of translations modules available by subtracting line C from line A and enter the result on line D.

(e) Determine the total right- and left-half translation words by multiplying line D by 8192; enter the result on line E. Also, multiply line D by 4096 and enter the result on line F.

(f) Obtain, from network maintenance, the total number of linked translation modules and enter the total on line G.

(g) Multiply line G by 8192 and enter the result on line H. Also multiply line G by 4096 and enter the result on line I.

(h) Determine and enter the total spare right and left translation words on lines J and K. This is done by taking the total spare right-half words from the PSVFY-1 form and entering the number on line J and by taking one-half the total spare left-half words on the PSVFY-1 form and entering the number on line K.

(i) Determine the percentage of usage of *active* right translation words (percentage used) by subtracting line J from line H, dividing the result by line H, and multiplying by 100 percent. Enter the result on line L. Do the same for left translation words by subtracting line K from line I, dividing the result by line I, and multiplying by 100 percent (enter the result on line M).

(j) Determine the percentage of usage of *available* right translation words (percentage working) by subtracting line J from line H, dividing the result by line E, and multiplying by 100 percent. Enter the result on line N. Do the same for left translation words by subtracting line K from line I, dividing the result by line F, and multiplying by 100 percent (enter the result on line O).

(k) Enter the date on line P.

(l) The PSVFY-5 form data can be used for making percentage capacity charts and for trending. Lines L, M, N, and O can be related to projecting the line of exhaust of PS when plotted against time and end-of-engineering-period (this step is optional).

E. Task 5: Program Store Spare Word Capacity

4.05 The following procedure is a quick method for determining if the number of spare PS words will last throughout the engineering period and is performed at the beginning of the period or as required.

(a) Multiply the expected number of main-station additions by (one minus the overall abbreviation times 5) (eg, 1500 [1-0.85]5 = 1125).

In the example the numbers represent the following:

- 1500 = Expected main-station gain

- 1-0.85 = One minus the overall abbreviation

- 5 = Estimate of words per auxiliary block

- 1125 = Words required for the expected main-station gain.

(b) Using 2.09, determine trunk activity word requirements based on trunk forecasts.

(c) Determine estimated plant activity word usage by using Figure 1 and the quantities of each item expected to be added.

(d) Add the words in (a), (b), and (c) together.

(e) The above calculations give a rough estimate of word requirements. If the estimate exceeds the available words, a more refined analysis is required and the network design engineer should be consulted.

ABBREVIATION DETERMINATION

A. Procedure for Interpreting Primary Translation Words

4.06 The following procedure is used for obtaining and interpreting PTWs for DNs and LENs. Figure 6 may be used as an aid in following the procedure as it would appear on the TTY.

(a) Input via the network administration TTY the TAG message for the DN or LEN in question.

For DNs:

TAG-DN-aaaaaaa

Where:

aaaaaaa = the DN.

For LENs:

TAG-LEN-aaaaaaaa

Where:

aaaaaaaa = the LEN.

Note: The remainder of the procedure applies to both LEN and DN PTW interpretations.

(b) Determine if the address given in the TR19/TR20 output message is for a left-half (first digit is 5, 6, or 7) or right-half (first digit is 1, 2, or 3) word.

(c) Input via TTY:

Right or Left:

VFY-PSWD-28 address

Where:

"address" = the 7-digit octal address obtained from the TR19/20 output message.

If left, also input (after TR34 response for above input):

VFY-PSWD-28 address+1

Where:

"address+1" = the next higher 7-digit octal left-half word address.

(d) Refer to Table F for interpretation of the PTW output (TR34) for abbreviation status by using the following subtables.

Subtable	Condition
1	Right-half word *without* recent change (see Note 1)
2	Right-half word *with* recent change
3	Left-half word *without* recent change
4	Left-half word *with* recent change

Note 1: A recent change message has more than two data lines after the TR34 line.

Note 2: See Figures 7 through 9 for examples of interpreting messages.

(e) Note the results on any required forms depending on which abbreviation check task is being performed.

B. *Procedure for Daily/Weekly Abbreviation Checks*

4.07 The procedure for daily/weekly abbreviation checks is performed any time the conditions discussed in 3.22 through 3.27 exist.

(a) The network administrator, based on current activity, should determine whether to perform the check on a daily or weekly sampling period.

(b) Once the period is determined, all new or change service orders should be accumulated in a file during the period chosen. A new file should be started when the current period is completed.

(c) Count the total orders for the period and enter the total on line C for PSABB-1 (see Fig. 18). Also complete lines A and B and the heading information.

(d) Select 10 percent of the orders accumulated *at random.* A minimum of 14 orders should be selected in this sample.

(e) Take one order at a time. If the order has one type of class-of-service, verify one of the lines on the order for LEN and DN abbreviation status using the procedure for interpreting primary translation words (4.05). If the order has more than one class of service, select 10 percent of the lines (a minimum of two) on the order and verify each as if it were a separate order. (For each subsample over one on these multiclass orders, increment line C of PSABB-1 by one.) When an unabbreviated class is found, enter the DN, LEN, line class code, feature/option, and originating/terminating abbreviation status of the tested line and also the quantity of all lines involved in the sample which have the same line class code (and features) in columns D through I of PSABB-1.

(f) When all sample orders have been verified, calculate the percentage abbreviated by first totaling column I. Perform the following calculations to determine percentage of abbreviation:

$$\underline{\text{Line C} - \text{Total Column I}} \times 100\% = \% \text{ Abbreviated}$$
$$C$$

Enter the result in the box headed "% ABB=".

(g) Analyze the results of the present and past periods to determine if new ABB codes should be established. Enter a "see note" reference on the block area and note reasons, if any, for poor abbreviation. If the sample does not indicate an acceptable abbreviation, a larger sample should be selected. If the larger sample still has a low percentage of abbreviation, then the cause must be determined. One cause could be errors in the abbreviated code expansion tables. Additional abbreviated codes may be required. Also, additional service order input training may be needed for the customer facilities assignment personnel.

C. Procedure for Semiannual Review of Percentage of Abbreviation

4.08 The following procedure is recommended for determining the percentage of abbreviation of service order inputs.

(a) Determine the period (one or two weeks) that the review will cover (see 3.29).

(b) Obtain the following records and forms:

(1) Service orders covering the period selected

(2) The form called "Abbreviated Class Code Check" PSABB-2

(3) All PSABB-1 forms used for the daily/weekly abbreviation checks since the last semiannual review

(4) If available, the latest dated TRIMS or TAA run for the office

(5) The local form showing the class-of-service equivalent with the line class code

One group of 1MB

(6) The 1502 and 1503 series translation forms for the office.

One group of 1MR

(c) Sort the posted service orders into groups by line class code.

One group of 2MR

For example:

(d) For those orders that have more than one number:

One group of 1FR

IF ALL THE NUMBERS ON THE ORDER:	THEN:
Have the same features and equipment	Put the order in the correct group.
Do not have the same features and equipment	Put the order aside in a separate group. It will be used in Step (j).

(e) Sort each line class code group into smaller groups according to features or options.

For example:

GROUP NO.	LCC	FEATURE OR OPTION
1	1FR	Dial pulse
2	1FR	TOUCH-TONE
3	1FR	TOUCH-TONE—call waiting
4	1MB	Dial pulse—call forwarding
5	1MB	TOUCH-TONE

(f) Take the top service order from one of these groups.

(g) Using the information on the service order, fill in these columns of the abbreviated code check form: Directory No., LEN, LCC, and Feature Or Option. See Figure 19, Stage A.

(h) Place this service order back on the top of its group and clip the orders in the group together. Repeat (e) through (g) for each of the other groups of service orders. Remember to use only the top service order from each group. Then go to (i).

(i) Count and total the number of lines used on the service orders in each group and enter the total under "Lines (C) Total" on the appropriate line of the abbreviated code check form. See Figure 19, Stage A.

(j) Analyze the service orders that were put aside in (d) by:

   (1) Comparing each line of each service order with the LCC features and options line on the abbreviated code check form. For each match add one to the "Lines (C) Total" for that feature.

   (2) Making additional entries and totals for those line class code features and options that were not previously found in (e) through (g).

(k) Fill out the top of the abbreviated code check form. File the service orders.

(l) For each line on the abbreviated code check form, check to see whether or not the 1502/1503 forms indicate that the service should be abbreviated. If the service should be abbreviated, put a small check ($\checkmark$) in the corner of column A or B as appropriate (See Fig. 19, Stage B).

(m) Using the procedure for interpreting primary translation words (4.06), verify for each line on the abbreviated class code check form whether the originating (LEN) and terminating (DN) PTW uses abbreviated codes. Enter "yes" in column 1 if the originating (LEN) PTW is abbreviated and "yes" in column 2 if the terminating (DN) PTW is abbreviated. Otherwise, enter "no" in column 1 or 2 (see Fig. 19, Stage B).

(n) After completing (m), examine each line of the abbreviated code check form and enter information in columns A and B. Follow the procedure outlined in the table below. After entering this information for every line, as shown in Figure 19, Stage C, go on to (c).

IF THE COLUMN "ORIG" OR "TERM":	THEN:
Has a "yes"	Enter the figure given in "Lines (C) Total" in Column A or B.
Has a "no"	Enter 0 (zero) in Column A or B, whichever is applicable.

(o) Total columns A, B, and C as shown in Figure 19, Stage D.

(p) Calculate the percentage of use of the originating abbreviated class codes. Divide the total for the column "Orig (A)" by the total for the column "Lines (C) Total":

$$\frac{\text{Total column A}}{\text{Total column C}} \times 100 = \%$$

Round off this percentage to the nearest whole number. Example:

Total A = 68

Total C = 83

$$\frac{68}{83} \times 100 = 81.9\%$$

or 82%

(q) Record the answer in column A on the line labeled "% Util." The line labeled "% Util" stands for percentage of utilization, meaning percentage of use.

(r) Calculate the percentage-of-use of the terminating abbreviated class codes:

Divide the total for the column "Term (B)" by the total for the column "Lines (C) Total:"

$$\frac{\text{Total column } \mathbf{B}}{\text{Total column C}} \times 100 = \%$$

Round off this percentage to the nearest whole number as was done in (p).

Example:

Total B = 71

Total C = 83

$$\frac{71}{83} \times 100 = 85.5\%$$

or 86%

(s) Record the answer in column B on the line labeled "% Util." Average the percentages in columns A and B and put result in column C (this is the overall abbreviation percentage). The form should now be completed (see Figure 20). (Note that in the example shown in Figure 20 the abbreviation efficiency and overall abbreviation could have been much higher since only the originating for 779-4334 was unabbreviatable.)

(t) Analyze the abbreviation class code check form for cases where column 1 or 2 contains a *no* and column A or B contains a check. Determine the cause for any such occurrence because there is either no actual code in memory or the service order was incorrectly entered. Also check for cases where a "yes" occurs in column 1 or 2 and no check is in column A or B; determine the reason for this. The maintenance center can perform a T-read of the abbreviated expansion table in order to determine if the code exists in memory. If any of the services are abbreviated when the translation forms indicate that there was no abbreviated code for that service, a check should also be made. The forms either need to be updated, or, once again, the order may have been incorrectly inputted.

(u) If the percentage of use is less than 80 percent, analyze the abbreviated class code form for candidates for abbreviation. Also consult the daily/weekly abbreviated check forms to assist in determining which classes of service are candidates for abbreviation. If a class of service is appearing, on the average, at a rate of 50 a year and the rate is expected to continue, that class of service should be abbreviated.

(v) Certain abbreviated codes that have been used in the past may no longer be needed. The latest TRIMS or TAA printout for the office

should show which codes are being used the least. Check the semiannual and daily/weekly abbreviated code. Check forms to determine if these codes are being used enough to warrant retention of the code for that class of service. If a code is not being used enough, take steps to have the code deleted and the customers served by that code converted to auxiliary blocks. This phase of analysis is required especially when an office has shortage of abbreviated codes.

5. REPRODUCIBLE FORMS

5.01 Attached to this section are reproducible forms that may be used for the procedures in Part 4. These forms are: PSVF-1, 2, 3, 4, and 5 and PSABB-1, 2.

5.02 Figure 1 or portions of Figure 1 may also be reproduced for use as worksheets.

TABLE A

NETWORK ADMINISTRATOR'S RESPONSIBILITIES
— PROGRAM STORE

1. Analyze program store space

   (a) Verify space (4.01)
   (b) Calculate words per main station (4.02)
   (c) Calculate percentage of utilization (4.04)
   (d) Calculate percentage used (4.03)
   (e) Resolve unexplained and unusual word usage (4.01—4.04)
   (f) Determine spare word capacity (4.05)

2. Analyze percentage of abbreviation for the ESS unit

   (a) Sample service orders and verify abbreviation percentage (4.06)
   (b) Ensure correct abbreviated code input of MLHG and centrex orders (3.28)
   (c) Semiannually review percent abbreviation (4.08)
   (d) Review TRIMs and TAA runs (2.19)
   (e) Annually have network maintenance T-read the abbreviated code expansion tables in translations and ensure that it and the 1502/1503 forms are compatible (2.04)

3. Monitor balanced usage of left- and right-half words

   (a) Have appropriate subtranslators transferred when required (2.11)
   (b) Ensure availability of left-half words for anticipated vertical services (ie, custom calling features requiring left-half words) (2.06)
   (c) Keep track of reserved areas for growth (2.07)
   (d) Analyze TAA and TRR runs for accuracy (2.19)

4. Report trouble conditions and provide backup data to network design or network maintenance for consultation, analysis, or correction of the following:

   (a) Immediate shortage of left- or right-half words (2.06, 3.03)
   (b) Shortage of ABB codes (2.01)
   (c) Imbalance of left- and right-half words (2.13)
   (d) Unexplained gain or loss of words (4.02)
   (e) Abbreviation percentage is marginal (4.07, 4.08)
   (f) Any unusual conditions (4.01—4.08)
   (g) Large number of unusable small-sized holes (2.15)
   (h) Majority of total spare words is contained in the less-than-32 category (2.15)
   (i) A mod was added to the link list without need (2.16)
   (j) A mod should be added to link list (2.16)
   (k) An error condition appears on the verify space printout (4.01)

TABLE B

TR13 (VERIFY-SPACE) OUTPUT MESSAGE FORMAT

INPUT TYPE REQUEST	OUTPUT SP/CC-CTX-7	NOTES

(A)
Single Output
Request:
Input =
  VFY-SPACE - 29 a bb 0.
	M XX TR13 a bb
	  ccccccc
		Two output lines;
		One data line.

(B)
Multiple Output
Request:
Input =
  VFY-SPACE - 29 a 33 0.
	M XX TR13 a 1
	  ccccccc
	  : : : :
	  : : : :
	M XX TR13 a 32
		Two output lines
		per TR13,
		32 *total* TR13s,
		one data line
		per TR13.

(C)
32-Or-Greater
Output Request:
Input =
  VFY-SPACE - 29 a 32 1.
	M XX TR13 a 32
	  ddddddd
	  eeeeeee
	  ddddddd
	  eeeeeee
	  : : : :
	  : : : :
		One or more blocks
		of TR13s with
		11 output lines or
		10 data lines
		each.

(D)
Hole Address
Request:
Input
  VFY-SPACE - 29 a bb 1.
  where bb $\neq$ 32
	M XX TR13 a bb
	  ddddddd
	  ddddddd
	  : : : :
	  : : : :
		One or more blocks
		of TR13s with
		11 output lines or
		10 data lines
		each.

Explanation Of Variables:

$$XX = \text{minutes after hour}$$
$$a = 0 \text{ if right half}$$
$$= 1 \text{ if left half}$$
$$bb = \text{hole size}$$
$$ccccccc = \text{octal quantity of holes sized bb}$$
$$ddddddd = \text{hole address}$$
$$eeeeeee = \text{length of hole type 32-or-greater}$$
$$TR13 = \text{message identifier for OM-1A001}$$
output manual

Note: Prior to SP/CC-CTX-7 there is no M preceeding the TR13
      output and the data lines are not centered under the
      TR13 identifier.

TABLE C

OCTAL-DECIMAL INTERGER CONVERSION TABLE

	0	1	2	3	4	5	6	7
0000	0000	0001	0002	0003	0004	0005	0006	0007
0010	0008	0009	0010	0011	0012	0013	0014	0015
0020	0016	0017	0018	0019	0020	0021	0022	0023
0030	0024	0025	0026	0027	0028	0029	0030	0031
0040	0032	0033	0034	0035	0036	0037	0038	0039
0050	0040	0041	0042	0043	0044	0045	0046	0047
0060	0048	0049	0050	0051	0052	0053	0054	0055
0070	0056	0057	0058	0059	0060	0061	0062	0063
0100	0064	0065	0066	0067	0068	0069	0070	0071
0110	0072	0073	0074	0075	0076	0077	0078	0079
0120	0080	0081	0082	0083	0084	0085	0086	0087
0130	0088	0089	0090	0091	0092	0093	0094	0095
0140	0096	0097	0098	0099	0100	0101	0102	0103
0150	0104	0105	0106	0107	0108	0109	0110	0111
0160	0112	0113	0114	0115	0116	0117	0118	0119
0170	0120	0121	0122	0123	0124	0125	0126	0127
0200	0128	0129	0130	0131	0132	0133	0134	0135
0210	0136	0137	0138	0139	0140	0141	0142	0143
0220	0144	0145	0146	0147	0148	0149	0150	0151
0230	0152	0153	0154	0155	0156	0157	0158	0159
0240	0160	0161	0162	0163	0164	0165	0166	0167
0250	0168	0169	0170	0171	0172	0173	0174	0175
0260	0176	0177	0178	0179	0180	0181	0182	0183
0270	0184	0185	0186	0187	0188	0189	0190	0191
0300	0192	0193	0194	0195	0196	0197	0198	0199
0310	0200	0201	0202	0203	0204	0205	0206	0207
0320	0208	0209	0210	0211	0212	0213	0214	0215
0330	0216	0217	0218	0219	0220	0221	0222	0223
0340	0224	0225	0226	0227	0228	0229	0230	0231
0350	0232	0233	0234	0235	0236	0237	0238	0239
0360	0240	0241	0242	0243	0244	0245	0246	0247
0370	0248	0249	0250	0251	0252	0253	0254	0255

OCTAL	DECIMAL
0000	0000
To	To
0377	0255

TABLE C (Cont)

OCTAL — DECIMAL INTERGER CONVERSION TABLE

	0	1	2	3	4	5	6	7
0400	0256	0257	0258	0259	0260	0261	0262	0263
0410	0264	0265	0266	0267	0268	0269	0270	0271
0420	0272	0273	0274	0275	0276	0277	0278	0279
0430	0280	0281	0282	0283	0284	0285	0286	0287
0440	0288	0289	0290	0291	0292	0293	0294	0295
0450	0296	0297	0298	0299	0300	0301	0302	0303
0460	0304	0305	0306	0307	0308	0309	0310	0311
0470	0312	0313	0314	0315	0316	0317	0318	0319
0500	0320	0321	0322	0323	0324	0325	0326	0327
0510	0328	0329	0330	0331	0332	0333	0334	0335
0520	0336	0337	0338	0339	0340	0341	0342	0343
0530	0344	0345	0346	0347	0348	0349	0350	0351
0540	0352	0353	0354	0355	0356	0357	0358	0359
0550	0360	0361	0362	0363	0364	0365	0366	0367
0560	0368	0369	0370	0371	0372	0373	0374	0375
0570	0376	0377	0378	0379	0380	0381	0382	0383
0600	0384	0385	0386	0387	0388	0389	0390	0391
0610	0392	0393	0394	0395	0396	0397	0398	0399
0620	0400	0401	0402	0403	0404	0405	0406	0407
0630	0408	0409	0410	0411	0412	0413	0414	0415
0640	0416	0417	0418	0419	0420	0421	0422	0423
0650	0424	0425	0426	0427	0428	0429	0430	0431
0660	0432	0433	0434	0435	0436	0437	0438	0439
0670	0440	0441	0442	0443	0444	0445	0446	0447
0700	0448	0449	0450	0451	0452	0453	0454	0455
0710	0456	0457	0458	0459	0460	0461	0462	0463
0720	0464	0465	0466	0467	0468	0469	0470	0471
0730	0472	0473	0474	0475	0476	0477	0478	0479
0740	0480	0481	0482	0483	0484	0485	0486	0487
0750	0488	0489	0490	0491	0492	0493	0494	0495
0760	0496	0497	0498	0499	0500	0501	0502	0503
0770	0504	0505	0506	0507	0508	0509	0510	0511

OCTAL	DECIMAL
0400	0256
To	To
0777	0511

TABLE C (Cont)

OCTAL – DECIMAL INTERGER CONVERSION TABLE

	0	1	2	3	4	5	6	7
1000	0512	0513	0514	0515	0516	0517	0518	0519
1010	0520	0521	0522	0523	0524	0525	0526	0527
1020	0528	0529	0530	0531	0532	0533	0534	0535
1030	0536	0537	0538	0539	0540	0541	0542	0543
1040	0544	0545	0546	0547	0548	0549	0550	0551
1050	0552	0553	0554	0555	0556	0557	0558	0559
1060	0560	0561	0562	0563	0564	0565	0566	0567
1070	0568	0569	0570	0571	0572	0573	0574	0575
1100	0576	0577	0578	0579	0580	0581	0582	0583
1110	0584	0585	0586	0587	0588	0589	0590	0591
1120	0592	0593	0594	0595	0596	0597	0598	0599
1130	0600	0601	0602	0603	0604	0605	0606	0607
1140	0608	0609	0610	0611	0612	0613	0614	0615
1150	0616	0617	0618	0619	0620	0621	0622	0623
1160	0624	0625	0626	0627	0628	0629	0630	0631
1170	0632	0633	0634	0635	0636	0637	0638	0639
1200	0640	0641	0642	0643	0644	0645	0646	0647
1210	0648	0649	0650	0651	0652	0653	0654	0655
1220	0656	0657	0658	0659	0660	0661	0662	0663
1230	0664	0665	0666	0667	0668	0669	0670	0671
1240	0672	0673	0674	0675	0676	0677	0678	0679
1250	0680	0681	0682	0683	0684	0685	0686	0687
1260	0688	0689	0690	0691	0692	0693	0694	0695
1270	0696	0697	0698	0699	0700	0701	0702	0703
1300	0704	0705	0706	0707	0708	0709	0710	0711
1310	0712	0713	0714	0715	0716	0717	0718	0719
1320	0720	0721	0722	0723	0724	0725	0726	0727
1330	0728	0729	0730	0731	0732	0733	0734	0735
1340	0736	0737	0738	0739	0740	0741	0742	0743
1350	0744	0745	0746	0747	0748	0749	0750	0751
1360	0752	0753	0754	0755	0756	0757	0758	0759
1370	0760	0761	0762	0763	0764	0765	0766	0767

OCTAL	DECIMAL
1000	0512
To	To
1377	0767

TABLE C (Cont)

OCTAL – DECIMAL INTERGER CONVERSION TABLE

	0	1	2	3	4	5	6	7
1400	0768	0769	0770	0771	0772	0773	0774	0775
1410	0776	0777	0778	0779	0780	0781	0782	0783
1420	0784	0785	0786	0787	0788	0789	0790	0791
1430	0792	0793	0794	0795	0796	0797	0798	0799
1440	0800	0801	0802	0803	0804	0805	0806	0807
1450	0808	0809	0810	0811	0812	0813	0814	0815
1460	0816	0817	0818	0819	0820	0821	0822	0823
1470	0824	0825	0826	0827	0828	0829	0830	0831
1500	0832	0833	0834	0835	0836	0837	0838	0839
1510	0840	0841	0842	0843	0844	0845	0846	0847
1520	0848	0849	0850	0851	0852	0853	0854	0855
1530	0856	0857	0858	0859	0860	0861	0862	0863
1540	0864	0865	0866	0867	0868	0869	0870	0871
1550	0872	0873	0874	0875	0876	0877	0878	0879
1560	0880	0881	0882	0883	0884	0885	0886	0887
1570	0888	0889	0890	0891	0892	0893	0894	0895
1600	0896	0897	0898	0899	0900	0901	0902	0903
1610	0904	0905	0906	0907	0908	0909	0910	0911
1620	0912	0913	0914	0915	0916	0917	0918	0919
1630	0920	0921	0922	0923	0924	0925	0926	0927
1640	0928	0929	0930	0931	0932	0933	0934	0935
1650	0936	0937	0938	0939	0940	0941	0942	0943
1660	0944	0945	0946	0947	0948	0949	0950	0951
1670	0952	0953	0954	0955	0956	0957	0958	0959
1700	0960	0961	0962	0963	0964	0965	0966	0967
1710	0968	0969	0970	0971	0972	0973	0974	0975
1720	0976	0977	0978	0979	0980	0981	0982	0983
1730	0984	0985	0986	0987	0988	0989	0990	0991
1740	0992	0993	0994	0995	0996	0997	0998	0999
1750	1000	1001	1002	1003	1004	1005	1006	1007
1760	1008	1009	1010	1011	1012	1013	1014	1015
1770	1016	1017	1018	1019	1020	1021	1022	1023

OCTAL	DECIMAL
1400	0768
To	To
1777	1023

TABLE D

MANUAL OCTAL – DECIMAL

CONVERSION TABLE

Procedures for converting octal numbers to decimal when they exceed those shown on Conversion Table C.

Enter octal number in column A, multiply by its corresponding number in column B. Enter total in column C.

	A		B		C
hund-thou		x	32768	=	
ten-thou		x	4096	=	
thousands		x	512	=	
hundreds		x	64	=	
tens		x	8	=	
units		x	1	=	

Add column C together _____ = Decimal equivalent of octal number

Example: Octal number to convert ___*5421*___

	A		B		C
hund-thou		x	32768	=	
ten-thou		x	4096	=	
thousands	*5*	x	512	=	*2560*
hundreds	*4*	x	64	=	*256*
tens	*2*	x	8	=	*16*
units	*1*	x	1	=	*1*
					2833

2833 = Decimal equivalent of octal number.

TABLE E

NO. 1 ESS
PROGRAM STORE
MODULES REQUIRED FOR GENERIC PROGRAM PLUS OFFICE PARAMETERS

GENERIC PROGRAM		ISSUE	UNDUPLICATED MODULES FOR PROGRAMS PLUS PARAMETERS	MAXIMUM PROGRAM STORES PER CONTROL GROUP
MD Rated Programs —				
	CC—1		18	6
	CC—2		19	6
	CC—3		20	6
	SP—1		24	6
	CC—CTX-1		22	6
	SP—CTX-1		26	6
	CC—CTX-2		24	12
	SP—CTX-3		29	12
	CC—CTX-4		26	12
	SP—CTX-4		30	12
	SP—CTX-5		31	12
	CC—CTX-6		30	12
	SP—CTX-6		35	12
A & M Rated Programs —				
	CC—CTX-7		33	12
	SP—CTX-7		38	12
Std. Rated Programs —				
	CC—CTX-8	3	34-37 (See note)	12
	SP—CTX-8	3	38-41 (See note)	12

Note: This table identifies the quantity of unduplicated program store modules required for generic program and office parameters. For offices equipped with programs up to and including SP/CC—CTX-7, the number of modules depends on the generic program used and is the same for all offices using that generic, regardless of size. Starting with SP/CC—CTX-8 generic programs, module requirements may vary between minimum and maximum requirements listed, dependent upon feature options equipped, as discussed in GL 75-06-228.

TABLE F

PRIMARY TRANSLATION WORD INTERPRETATION TABLES

Interpretation Table 1:

Condition	1st b-Digit	2nd b-Digit	Status	TR34 Format
1	Not 0	Any number	Abbreviated	XX TR34 aaaaaaa
2	0	4 or more	Abbreviated	bbbbbbbb 000000
3	0	1, 2, or 3	Unabbreviated	

Interpretation Table 2:

Condition	Z-Digit	1st e-Digit	2nd e-Digit	Status	TR34 Format
1	No Z = 0	—	—	See Note	XX TR34 aaaaaaa bbbbbbbb
2	2	Not 0	Any number	Abbreviated	ccccccc
3	2	0	4 or more	Abbreviated	$\underline{Z}$ddddddd $\underline{e}$eeeeeee
4	2	0	1, 2, or 3	Unabbreviated	XX TR34 aaaaaaa bbbbbbbb
Note: Use the bbbbbbbb data from the first block of TR34 output and interpret ABB status by using Table 1.					cccccc $\underline{Z}$ddddddd $\underline{e}$eeeeeee . . . . . XX TR34 aaaaaaa bbbbbbbb 000000

TABLE F (Cont)

PRIMARY TRANSLATION WORD INTERPRETATION TABLES

Interpretation Table 3:

Condition	Z-Digit (Odd Address)	Status	TR34 Format
1	0	Unabbreviated	*Even Address:* XX TR34 aaaaaaa bbbbbbbb 000000
2	Not 0	Abbreviated	
			Odd Address: XX TR34 aaaaaaa bbbbbzbb 000000

Interpretation Table 4:

Condition	Z-Digit (Even Address)	Y-Digit (Odd Address)	Even Address E-Digit	Even Address F-Digit	Status	TR34 Format
1	No Z = 0	0	—	—	Unabbreviated	*Even Address:* XX TR34 aaaaaaa bbbbbbbb cccccc zddddddd efgggggg
2	No Z = 2	Not 0	—	—	Abbreviated	
3	Z	—	Not 0	Any	Abbreviated	
4	Z	—	0	4 or more	Abbreviated	XX TR34 aaaaaaa ⋮
5	Z	—	0	1, 2, or 3	Unabbreviated	
						XX TR34 aaaaaaa bbbbbbbb 000000
						Odd Address: XX TR34 aaaaaaa bbbbbYbb 000000

1. *Head Tables — 23-Bit Right Side Words*

ITEM		WORDS PER ITEM		WORDS TOTAL
a.	Fixed location tables			722
b.	Groups of 1000 directory numbers _____ X	1	=	_____
c.	Line link networks _____ X	8	=	_____
d.	3- and 6-digit translators _____ X	1	=	_____
e.	TLN equipment translators _____ X	8	=	_____
f.	TLN trunk group translators _____ X	8	=	_____
g.	Universal trunk frames — each _____ X	1	=	_____
	Miniaturized universal trunk bays — each_____ X	1	=	_____
h.	Master scanner frames — each _____ X	1	=	_____
	Combined miscellaneous trunk frames — each _____ X	1	=	_____
i.	Trunk groups _____ X	1	=	_____
j.	Trunk class codes _____ X	4	=	_____
k.	Normalized office codes _____ X	10	=	_____
l.	Multiline hunting groups _____ X	1	=	_____
m.	Chart class columns _____ X	1	=	_____
n.	Route indices _____ X	2	=	_____
o.	Charge indices _____ X	1	=	_____
p.	Central pulse distributors — pairs_____ X	1	=	_____
q.	Line class codes _____ X	2	=	_____
r.	Automatic trunk test table _____ X	5	=	_____
s.	Incoming trunk office selector table _____ X	10	=	_____
t.	Rate and route pattern blocks _____ X	1	=	_____
u.	H-Schedule list number blocks_____ X	1	=	_____
v.	C-Schedule list number blocks _____ X	1	=	_____

Fig. 1—Program Store Translation Word Requirements (Sheet 1 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

1. *Head Tables — 23-Bit Right Side Words (Cont)*

ITEM		WORDS PER ITEM		WORDS TOTAL
w.	Traffic count — selected concentrator _____ 8 X	1	=	8
x.	Traffic count — selected lines _____ 128 X	1	=	128
y.	Trunk error parameter table		=	32
z.	Tandem table _____ X	1	=	
aa.	AUTOVON trunk groups _____ X	1	=	
ab.	Simulated facilities groups _____ X	1	=	
ac.	Rate centers _____ X	1	=	
ad.	Centrex group indices _____ X	1	=	
ae.	TOTAL HEAD TABLE RIGHT SIDE ONLY WORDS (Sum of items 1a thru 1ad)		=	

2. *Head Table Subtranslator — 23-Bit Either Side Words*

ITEM		WORDS PER ITEM		WORDS TOTAL
a.	Groups of 1000 directory numbers _____ X	1000	=	
b.	LSC (4:1) — Each 1024 lines or fraction (rounded up to whole number) _____ X	1024	=	
c.	LSC (2:1) — Each 512 lines or fraction (rounded up to whole number) _____ X	512	=	
d.	Universal trunk frames (3 bays) — each _____ X	256	=	
	Miniaturized universal trunk bays — each _____ X	256	=	
e.	Master scanner frames — each _____ X	1024	=	
	Combined miscellaneous trunk frames — each _____ X	1024	=	
f.	Test lines (TST ESS 1101) — each 1024 _____ X	1024	=	
g.	23-BIT EITHER SIDE WORDS (sum of 2a thru 2f)		=	

Fig. 1—Program Store Translation Word Requirements (Sheet 2 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

3. *Head Table Subtranslator — 14-Bit Left Side Only Words*

ITEM			WORDS PER ITEM	WORDS TOTAL
a.	3-digit translators (ESS 1300 A&B) _____	X	820	_____
b.	6-digit translators (ESS 1300 A&B) _____	X	800	_____
c.	Toll 3/6-digit translators (ESS 1311) _____	X	1000	_____
d.	Central pulse distributors — pairs _____	X	256	_____
e.	Junctor frames (3 bays) — each _____	X	16	_____
f.	Network management feature		=	64
g.	3/6-digit translators (ESS 1309) — 3-bit route sequence number (RSN00-07) _____	X	200	_____
*h.	Line link networks — each _____	X	64	_____
*i.	Trunk switch circuits — each _____	X	256	_____
j.	Trunk line networks — 1024 _____	X	64	_____
k.	Trunk link networks — 2048 _____	X	128	_____
l.	14-BIT LEFT SIDE ONLY WORDS (sum of items 3a thru 3k)		=	_____

*Applies only to those control groups equipped with Service Link Networks

4. *Head Table Subtranslator — 23-Bit Right Side Only Words*

ITEM			WORDS PER ITEM	WORDS TOTAL
a.	Blocks of 128 rate and route patterns _____	X	768	_____
b.	A10D talking path assignment table _____		=	126
c.	Rate and route chart columns Assignment to charts 1, 2, 4, 5, 6, 8, 9, 10, 12, 13, 14 _____	X	65	_____
	Assigned to charts 3, 7, 11, 15 _____	X	33	_____
d.	H-Schedule (blocks of 128 traffic counts) _____	X	128	_____
e.	C-Schedule (blocks of 128 traffic counts) _____	X	128	_____

Fig. 1—Program Store Translation Word Requirements (Sheet 3 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

4. *Head Table Subtranslator — 23-Bit Right Side Only Words (Cont)*

	ITEM		WORDS PER ITEM		WORDS TOTAL
f.	Line link networks — each _____	X	64	=	_____
g.	Trunk link networks — each_____	X	32	=	_____
h.	Trunk switch circuits — each _____	X	512	=	_____
i.	Total ESS frames — each _____	X	7	=	_____
j.	Centrex group indices _____	X	76	=	_____
k.	Centrex data links _____	X	17	=	_____
l.	Tandem tables — each _____	X	60	=	_____
m.	CAMA trunk group translators (ESS 1215 A & B) _____	X	2	=	_____
n.	Toll digit-by-digit translators (ESS 1218) _____	X	15	=	_____
o.	Flexible route selection (ESS 1308)_____	X	2	=	_____
p.	3/6-digit translators (ESS 1309) — 5-bit route sequence number _____	X	200	=	_____
q.	Route description numbers (ESS 1310) _____	X	1	=	_____
r.	IDDD country codes (ESS 1307)_____	X	48	=	_____
s.	Code conflict tables (ESS 1305-X) _____	X	256	=	_____
t.	Simulated facilities groups (ESS 1210) — each 16 _____	X	16	=	_____
u.	Simulated facilities group items _____	X	3	=	_____
v.	Plant trunk groups (ESS 1500B) _____	X	2	=	_____
*w.	Overhead _____	X	176	=	_____
*x.	Service link frames — each _____	X	41	=	_____
*y.	Service link frame pairs _____	X	512	=	_____
*z.	Trunk link network — each (This item is a savings; subtract it) _____	X	16	=	(_____)
aa.	23-BIT RIGHT SIDE ONLY WORDS (sum of items 4a thru 4y less 4z)			=	_____

*Applies only to those control groups equipped with Service Link Networks

Fig. 1—Program Store Translation Word Requirements (Sheet 4 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

5. *Line Translators*

ITEM		WORDS PER ITEM		WORDS TOTAL

BASIC WORD REQUIREMENT

a.	Individual lines _____	X	3	=	_____
b.	Multiline hunting group lines _____	X	4	=	_____
c.	Centrex lines _____	X	4	=	_____
d.	Two-party lines _____	X	5	=	_____
d.	Multiparty (4 and 8) lines _____	X	11	=	_____
f.	Sum of items 5a thru 5e			=	_____

ABBREVIATED FORMAT WORD SAVINGS – LINES COVERED
BY FORM ESS 1502-A

g.	Individual lines _____	X	3	=	_____
h.	Multiline hunting group lines _____	X	2	=	_____
i.	Centrex lines with abbreviated format (80% minimum) _____	X	4	=	_____
j.	Two-party lines _____	X	4	=	_____
k.	Sum of items 5g through 5j			=	_____
l.	Subtotal basic words — Right side words (item 5f minus 5k)			=	_____

ADDITIVE WORD REQUIREMENTS

m.	Lines with special billing number (excl MLH) _____	X	1	=	_____
n.	Lines with master scanner (MS) or miscellaneous trunk distributor number (MTDN) (excl MLH) _____	X	2	=	_____
o.	Subtotal right side words (sum of items 5m and 5n)			=	_____

Fig. 1—Program Store Translation Word Requirements (Sheet 5 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

5. *Line Translators (Cont)*

ITEM		WORDS PER ITEM		WORDS TOTAL
p. Lines with 1-digit speed calling (incl CTX) _____	X	16	=	_____
q. Lines with 2-digit speed calling _____	X	60	=	_____
r. Centrex group speed calling lists (man 100/CTX) _____	X	60	=	_____
s. TOTAL LEFT SIDE WORDS (sum of items D2.5p thru D2.5r)			=	_____
t. Each 10-digit number on any of above speed calling lists (items D2.5p, q, and r) _____	X	2	=	_____
u. Each 7- or 10-digit number on speed calling list preceded by an access code _____	X	3	=	_____
v. Total speed calling lists (from items 5p, q, & r) _____	X	1	=	_____
w. AIOD ANI units _____	X	4	=	_____
x. AIOD lines or trunks _____	X	5	=	_____
y. OSIP equipment _____	X	2	=	_____
z. MLH lines with special billing numbers and/or MS or MTDN _____	X	4	=	_____
aa. Lines used for screening (excl MLH lines with CTX-6 or later generic programs) _____	X	2	=	_____
ab. Total parties on multiparty lines _____	X	2	=	_____
ac. Subtotal right side words (sum of items 5t thru 5ab)			=	_____
ad. TOTAL RIGHT SIDE WORDS (sum of items 5l, 5o, & 5ac)			=	_____

Fig. 1—Program Store Translation Word Requirements (Sheet 6 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

6. *Directory Number Translators — 23-Bit Right Side Only Words*

ITEM		WORDS PER ITEM	WORDS TOTAL

BASIC WORD REQUIREMENT

a. Main station — period end (incl CTX) _____

b. Main stations covered by term abbr class (from Form ESS 1502-B) _____

c. Main stations requiring basic DN (item 6a minus 6b) _____ X __2__ = _____

ADDITIVE WORD REQUIREMENT

d. Directory numbers with series completion to other than next higher number (nonconsecutive) _____ X __1__ = _____

e. Directory numbers which have master scanner or miscellaneous trunk distributor number _____ X __1__ = _____

f. Directory numbers with Call Forward/ Busy Line or Don't Answer feature _____ X __1__ = _____

MULTILINE HUNTING

g. Multiline hunting groups (excl CTX) _____ X __8__ = _____

h. Centrex MLH groups _____ X __8__ = _____

i. Preferential hunt, outdial, or hunt groups (each) _____ X __1__ = _____

j. Queuing on trunks and lines (MLH groups) _____ X __2__ = _____

k. MLH groups having overflow registers (excl CTX) _____ X __1__ = _____

l. Dial call pickup groups _____ X __1__ = _____

m. Preferential hunt list, outdial list, or hunt list head tables (each) _____ X __1__ = _____

n. Preferential hunt list _____ X __6__ = _____

o. Outdial or hunt list (each) _____ X __16__ = _____

p. TOTAL RIGHT SIDE ONLY WORDS (Sum of items 6c thru 6o) = _____

Fig. 1—Program Store Translation Word Requirements (Sheet 7 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

7. *Unit Type Translators — 23-Bit Right Side Only Words*

ITEM		WORDS PER ITEM		WORDS TOTAL
a. Total trunks on misc trunk frames	X	4	=	
b. Two-way trunk groups	X	1	=	
c. Total two-way trunks	X	3	=	
d. Total recording completing trunks	X	2	=	
e. Conference trunks (3-port and 6-port)	X	24	=	
f. Carrier group alarm/trunk make busy keys — each two-way or operator trunk	X	1*	=	
— each one-way trunk	X	4*	=	
g. CGA/TMB Systems	X	1	=	
h. Total receivers — customer and incoming	X	2	=	
i. Ringing trunks — regular and special	X	2	=	
j. Coin zone trunks — 2-port	X	12	=	
k. Local coin overtime trunks — 2-port	X	12	=	
l. Incoming trunks — LTD and LTC	X	5	=	
m. TT and station ringer test trunks — 2-port	X	12	=	
n. Attendant loop circuits — 2-port	X	12	=	
o. AIOD unit type translator			=	86
p. Network management preprogrammed trunk group controls	X	5	=	
q. Queuing on lines and trunks (no. of MLH groups)	X	4	=	
r. Position make busy keys (MLH) — each MLH group	X	1	=	
— each key	X	1	=	
s. CAMA CW suspension	X	3	=	

Fig. 1—Program Store Translation Word Requirements (Sheet 8 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

7. *Unit Type Translators — 23-Bit Right Side Only Words (Cont)*

ITEM		WORDS PER ITEM		WORDS TOTAL
t. Directory number to centrex group — centrex groups	X	1	=	
— each 100 centrex numbers	X	1	=	
u. Tandem tie line trans/rcvr circuit	X	15	=	
v. RADR				
— fixed			=	2
— trunk types	X	11	=	
w. Network management indicators				
— fixed			=	24
— number of trunk groups (no circuit indicators	X	2	=	
x. Network management DOC transmit — fixed			=	49
— MC1/MC2 signals	X	2	=	
— MC3 signals	X	1	=	
y. TOTAL RIGHT SIDE ONLY WORDS (Sum of items 7a thru 7x)			=	

Fig. 1—Program Store Translation Word Requirements (Sheet 9 of 9) (2.07, 2.08, 2.10, 2.14, 4.05, 5.02)

VFY-SPACE-29 0 33 0.OK

M 56 TR13 0 1
00000000

M 59 TR13 0 2
00001002

M 59 TR13 0 3
00000001

M 59 TR13 0 4
00000277

M 59 TR13 0 5
00000050

M 59 TR13 0 6
00000030

M 59 TR13 0 7
00000001

M 59 TR13 0 8
00000000

M 59 TR13 0 9
00000000

M 59 TR13 0 10
00000000

M 59 TR13 0 11
00000000

M 59 TR13 0 12
00000031

M 59 TR13 0 13
00000000

M 00 TR13 0 14
00000000

M 00 TR13 0 15
00000003

M 00 TR13 0 16
00000051

M 00 TR13 0 17
00000000

M 00 TR13 0 18
00000000

M 00 TR13 0 19
00000000

M 00 TR13 0 20
00000000

M 00 TR13 0 21
00000000

M 00 TR13 0 22
00000000

M 00 TR13 0 23
00000000

M 00 TR13 0 24
00000000

M 00 TR13 0 25
00000000

M 00 TR13 0 26
00000000

M 00 TR13 0 27
00000000

M 00 TR13 0 28
00000000

M 01 TR13 0 29
00000000

M 01 TR13 0 30
00000000

M 01 TR13 0 31
00000000

M 01 TR13 0 32
00000004

VFY-SPACE-29 0 32 1.ØK

M 39 TR13 0 32
02562262
00000076
02561022
00001137
02377155
00000200
02520202
00012067
00000000
00000000

Fig. 2—Right-Half Hole Table Printout (3.17, 4.01)

VFY-SPACE-29 1 33 0.ØK

M 52 TR13 1 1
00000000

M 52 TR13 1 2
00000000

M 52 TR13 1 3
00000000

M 52 TR13 1 4
00000000

M 52 TR13 1 5
00000000

M 53 TR13 1 6
00000000

M 53 TR13 1 7
00000000

M 53 TR13 1 8
00000002

M 53 TR13 1 9
00000000

M 53 TR13 1 10
00000000

M 53 TR 13 1 11
00000000

M 53 TR13 1 12
00000000

M 53 TR13 1 13
00000000

M 53 TR13 1 14
00000000

M 53 TR13 1 15
00000000

M 53 TR13 1 16
00000001

M 53 TR13 1 17
00000000

M 53 TR13 1 18
00000000

M 53 TR13 1 19
00000000

M 53 TR13 1 20
00000000

M 54 TR13 1 21
00000000

M 54 TR13 1 22
00000000

M 54 TR13 1 23
00000000

M 54 TR13 1 24
00000001

M 54 TR13 1 25
00000000

M 54 TR13 1 26
00000000

M 54 TR13 1 27
00000000

M 54 TR13 1 28
00000000

M 54 TR13 1 29
00000000

M 54 TR13 1 30
00000000

M 54 TR13 1 31
00000000

M 54 TR13 1 32
00000003

VFY-SPACE-29 1 32 1.ØK

M 55 TR13 1 32
06530034
00003120
06437260
00000414
06521224
00006610
00000000
00000000
00000000
00000000

Fig. 3—Left-Half Hole Table Printout (3.17, 4.01)

TAG—LEN—04303115. OK
40 TR19 4303115
2306337

Where: TAG—LEN—04303115. OK

                                                    _____   Acknowledgement

                                              _____   LEN

                                    _____   Message Identifier

              40   TR19   4303115

                                                    _____   LEN

                                        _____   Type Output

                        _____   Minutes After Hour

              2306337   _____   LEN PTW Address
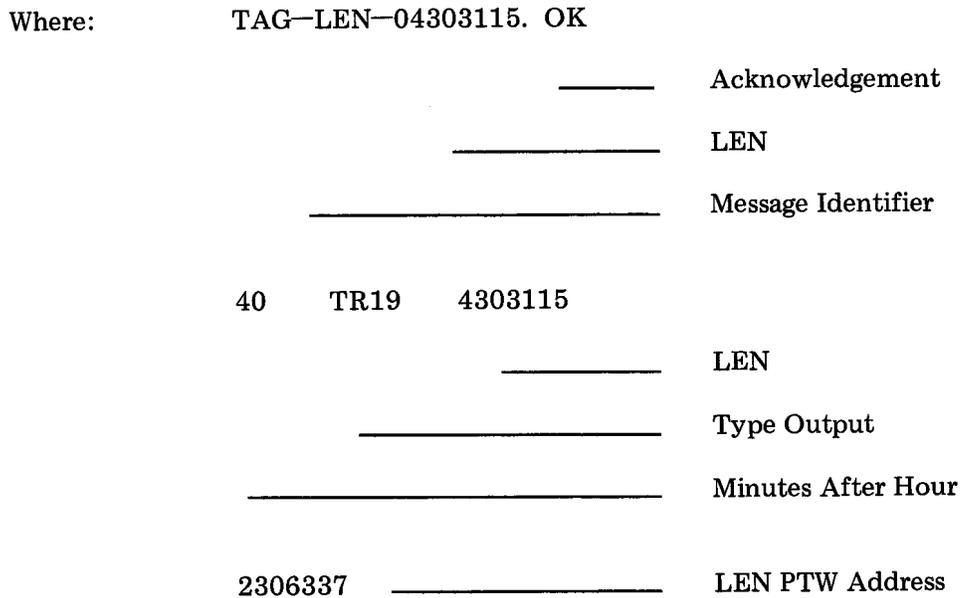
Fig. 4—TAG-LEN Input/Output (3.35)

TAG—DN—7689547. OK
38 TR20 7689547
6315110

Where: TAG—DN—7689547. OK

                                            _____   Acknowledgement

                                    _____   DN

                        _____   Message Identifier

        38   TR20   7689547

                                        _____   DN

                            _____   Type Message

            _____   Minutes After Hour

        6315110   _____   DN PTW Address
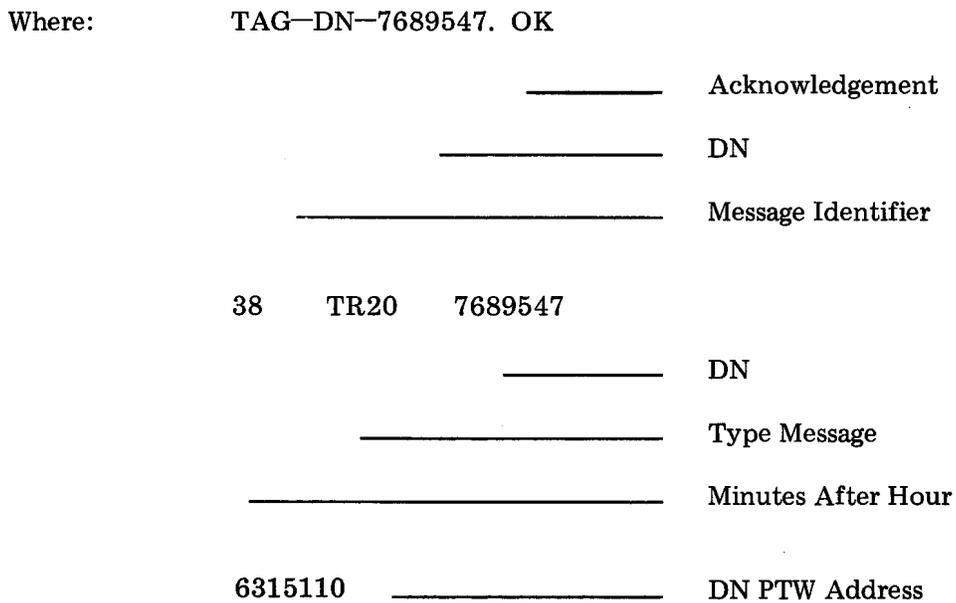
Fig. 5—TAG-DN Input/Output (3.36)

TAG—LEN—04303115. OK
40 TR19 4303115
2306337

VFY—PSWD—28 2306337. OK
03 TR34 2306337
20072526
000000

Where: VFY—PSWD—28 2306337. OK

                                                    _____   Acknowledgement

                                              _____   PTW Address (From TAG)

                                    _____   Message Identifier

              03   TR34   2306337

                                                    _____   PTW Address

                                        _____   Type Message

                        _____   Minutes After Hour

              20072526   _____   Contents of PTW

              000000   _____   Call Store Recent Change (RC)

                                                    Register Containing RC Data

                                                    (All Zeros Indicates No RC)
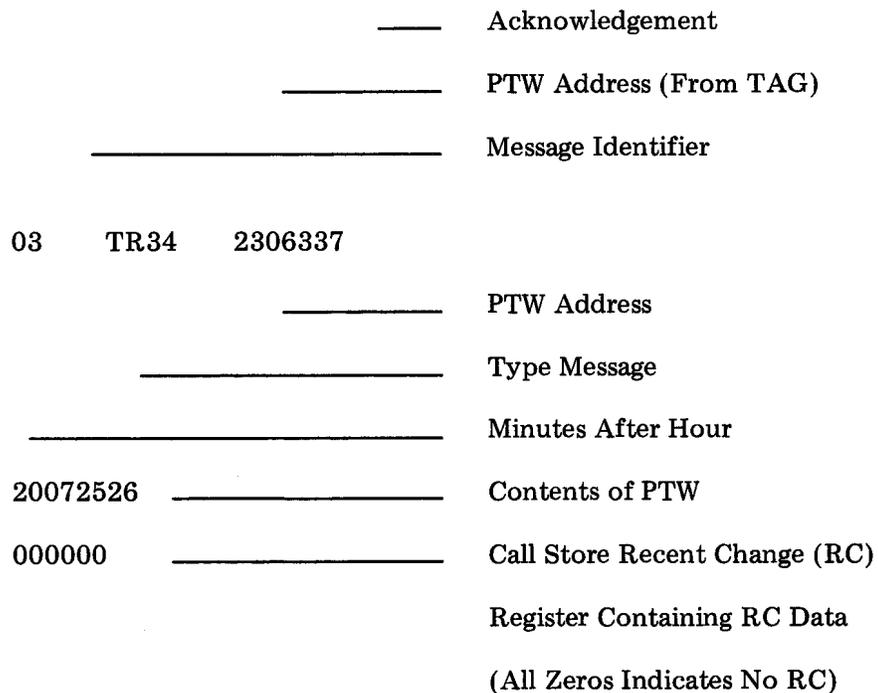
Fig. 6—Examples of VFY-PSWD Output Messages (Sheet 1 of 4) (3.37, 3.38, 4.06)

```
TAG—DN—7276530. OK
40 TR20 7276530
6315110
```

VFY—PSWD—28 6315110. OK   (a)

```
19 TR34 6315110.
00040000                          (c)
320745                            (d)
26315110                          (e)
17033735                          (f)

19 TR34 6315110                   (g)
00040000                          (h)
000000                            (i)
```

Where: Lines (a), (b), and (c) are the same format as previous example.

Line (d) indicates a recent change at call store address 320745.

Line (e) gives RC status and the address where the change will be put if permanent.

    ie,   26315110

                    —————————   PS Address To Be Changed

          —————————   Type Change (See Note 1.)

Line (f) is the data for the change; ie, new contents for the address.

Lines (g), (h), and (i) indicate no further recent changes.

Fig. 6—Examples of VFY-PSWD Output Messages (Sheet 2 of 4) (3.37, 3.38, 4.06)

TAG—DN—8340090. OK
07 TR20 8340090
6067416

VFY—PSWD—28 6067416. OK

08 TR34 6067416
00005240
321115
36067416
05442165

08 TR34 6067416

00005240
321117
36067416
00003562

08 TR34 6067416

00005240
321121
26067416
20063005

08 TR34 6067416

00005240
000000

Where: Each TR34 output block is interpreted as for prior example. This is a multiple
RC message (See Note 2)

Fig. 6—Examples of VFY-PSWD Output Messages (Sheet 3 of 4) (3.37, 3.38, 4.06)

Note 1: The second to last line of each TR34 output message block with recent change contains (in the first digit) the status of the change for that particular TR34. The following is used for interpreting that digit.

0 — Deleted: A deleted recent change no longer applies to the primary translation.

1 — Delayed: A delayed recent change results from a "delayed service order" input and is not yet active.

2 — Permanent: A permanent recent change applies to the primary translation and is placed in the program store when updating is performed. There can be only one permanent recent change at any one time.

3 — Temporary: A temporary recent change applies to the primary translation but is not entered in the program store when updating is performed. An active call forwarded line would be an example of a temporary recent change.

Note 2: As can be seen in Note 1, only changes with a status prefix of 2 will be written into program store. Since there can be only one permanent recent change at any one time, that particular TR34 message's last line is the one which should be used to interpret the PTW.

Note 3: When the recent change area has been frozen, these message inquiries should not be performed.

Fig. 6—Examples of VFY-PSWD Output Messages (Sheet 4 of 4) (3.37, 3.38, 4.06)

TAG-DN-768 2800.OK

    52 TR20 768 2800
    2314736

VFY-PSWD-28 2314736.OK

    55 TR34 2314736
    02504662..................Directory number not abbreviated.
    000000   First digit of right-half word is zero
                          and second digit is less than four.

TAG-LEN-00200215.OK

    54 TR19 0200215
    2570201

VFY-PSWD-28 2570201.OK

    55 TR34 2570201
    12455437..................Line equipment abbreviated.
    000000   First digit of right-half word
                          is not zero.

TAG-DN-768 9547.OK

    38 TR20 768 9547
    2555144

VFY-PSWD-28 2555144.OK

    39 TR34 2555144
    12430403..................Directory number abbreviated.
    000000   First digit of right-half word
                          is not zero.

TAG-LEN-04303115.OK

    40 TR19 4303115
    2306337

VFY-PSWD-28 2306337

    40 TR34 2306337
    13016664..................Line equipment abbreviated.
    000000   First digit of right-half word
                          is not zero.

Fig. 7—Right-Half Primary Translation Word-Abbreviation Check (Without Recent Change) (3.41, 4.06)

```
TAG-LEN-02225105.OK

   03 TR19 2 2 2 5 1 5
   6017252

VFY-PSWD-28 6017252.OK

   03 TR34 6017252
   20072526
   000000


VFY-PSWD-28 6017253.OK

   03 TR34 6017253
   00040260...............Denotes line equipment is abbreviated.
   000000                 Third least significant digit in second
                          left-half word is not zero.


TAG-DN-834 0453.OK

   01 TR20 834 0453
   6065000

VFY-PSWD-28 6065000.OK

   01 TR34 6065000
   00005525
   000000


VFY-PSWD-28 6065001.OK

   02 TR34 6065001
   00100251..................Denotes directory number is abbreviated.
   000000                    Third least significant digit in second
                             left-half word is not zero.
```

Fig. 8—Left-Half Primary Translation Word-Abbreviation Check (Without Recent Change) (Sheet 1 of 2) (3.44, 4.06)

```
TAG-DN- 834 0160.OK

   04 TR20 834 0160
   6063712

VFY-PSWD-26 6063712.OK

   03 TR34 6063712
   00017076
   000000

VFY-PSWD-28 6063713.OK

   03 TR34 6063713
   00000042................Directory number is not abbreviated.
   000000                  Third least significant digit in left-half word is zero.


TAG-LEN-02 103204.OK

   06 TR19 2 1 0 5 2 4
   6011310

VFY-PSWD-28 6011310.OK

   06 TR34 6011310
   20032073
   000000

VFY-PSWD-28 6011311.OK

   07 TR34 6011311
   00040260................Line equipment is abbreviated.
   000000                  Third least significant digit in left-half word is not zero.
```

Fig. 8—Left-Half Primary Translation Word-Abbreviation Check (Without Recent Change) (Sheet 2 of 2) (3.44, 4.06)

TAG-LEN-03120005.OK

   10 TR19 3 1 2 0 0 5
   6032012

VFY-PSWD-28 6032012.OK

   10 TR34 6032012
   00040000
   320745................Recent change register address
   26032012...............26032012 - Permanent status
   17033735..............Abbreviated code utilized.
                First digit of recent change data word is not zero.
   10 TR34 6032012
   00040000
   000000

TAG-DN-834 0090.OK

   07 TR20 834 0090
   6067416

VFY-PSWD-28 6067416.OK

   08 TR34 6067416
   00005240
   321115
   36067416............Denotes temporary recent change.
   05442165

   08 TR34 6067416   —Call forward feature activated.
   00005240
   321117
   36067416............Denotes temporary recent change.
   00003562

   08 TR34 6067416
   00005240
   321121
   26067416............Denotes permanent recent change
   20063005............Abbreviated code utilized.
                First digit of permanent recent change data word is not zero.
   06 TR34 6067416
   00005240
   000000

VFY-PSWD-28 6067417.OK

   09 TR34 6067417
   00000200
   000000

Fig. 9—Recent Change Abbreviation Check (Right-Half and Left-Half) (3.45, 4.06)

```
M 54 TR13 1 29
   00000000

M 54 TR13 1 30
   00000000

M 54 TR13 1 31
   00000000

M 54 TR13 1 32
   00000003                    3

VFY-SPACE-29 1 32 1.ØK

M 55 TR13 1 32
   06530034
   00003120                    1616
   06437260
   00000414                    268
   06521224
   00006610                    3472
   00000000
   00000000
   00000000
   00000000

VFY-SPACE-29 0 33 0.ØK

M 56 TR13 0 1
   00000000

M 59 TR13 0 2
   00001002                    514

M 58 TR13 0 3
   00000001                    1

M 59 TR13 0 4
   00000277                    191

M 59 TR13 0 5
   00000050                    40

M 59 TR13 0 6
   00000030                    24

M 59 TR13 0 7
   00000001                    1

M 59 TR13 0 8
   00000000
```

Fig. 10—Example of Octal-to-Decimal Conversion
(4.01)

PSVFY-1

LINK LIST SUMMARY
RECORD

TELE CO __017__ BASE __4E61__ CONT GRP __CGO__ ESS UNIT __Mablevale__

HOLE SIZE		QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	LINE AND/OR HOLE SIZE
DATE:		8-18-75		9-18-75										
PREPARER		JEK		JEK										
	1	—		—										1
	2	1	8	3	6									2
	3	2	6	1	3									3
	4	4	16	6	24									4
	5	2	10	1	5									5
	6	1	6	—										6
	7	—		1	7									7
	8	17	136	17	136									8
	9	4	36	4	36									9
	10	—		—										10
	11	—		—										11
	12	1	12	1	12									12
	13	—		—										13
	14	—		—										14
RIGHT HALF WORDS (23-BIT)	15	—		—										15
	16	—		—										16
	17	—		—										17
	18	—		—										18
	19	—		—										19
	20	—		—										20
	21	—		—										21
	22	—		—										22
	23	—		—										23
	24	—		—										24
	25	—		—										25
	26	—		—										26
	27	—		—										27
	28	—		—										28
	29	3	87	3	87									29
	30	1	30	1	30									30
	31	2	62	2	62									31
TOTAL 1-31		409		408										1-31
TOTAL 32+		4727		4538										32+
TOTAL RIGHT		5136		4946										1-32+
CHANGE SEE NOTE		-107		-190										CHANGE NOTE
	2	—		—										2
	4	—		—										4
	6	1	6	1	6									6
	8	—		—										8
	10	—		—										10
	12	2	24	2	24									12
LEFT HALF WORDS (14-BIT)	14	—		—										14
	16	1	16	1	16									16
	18	—		—										18
	20	—		—										20
	22	—		—										22
	24	2	48	2	48									24
	26	—		—										26
	28	3	84	3	84									28
	30	—		—										30
TOTAL 2-30		178		178										2-30
TOTAL 32+		3514		3514										32+
TOTAL LEFT		3692		3692										2-32+
CHANGE		-60		0										CHANGE

Fig. 11—Link List Summary Record (4.01)

PSVFY-2

LINK LIST RECORD
BLOCK SIZES 32 OR GREATER

TELE CO _O17_ BASE _4E61_ CONT GRP _CGO_ ESS UNIT _Mabelvale_

DATE:	8-18-75		9-18-75									
PS TW HALF	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
TOTAL BLOCKS	7	4	5	4								
B L O C K S I Z E	32	58	907	58								
	64	256	47	256								
	1000	128	1024	128								
	47	3072	512	3072								
	1024		2048									
	512											
	2048											
TOTAL 32+	4727	3514	4538	3514								

Fig. 12—Link List Record—Block Sizes 32 or Greater
(4.01)

PSVFY-3

LINK LIST RECORD
ABNORMAL MEMORY CONDITION

TELE CO _____ BASE _____ CONT GRP _____ ESS UNIT _____

NOTE NO.	DATE	CONDITION	CAUSE OR CORRECTIVE ACTION	IS PROBLEM CORRECTED

Fig. 13—Link List Record—Abnormal Memory Condition Farm (4.01)

PSVFY-4

WORD USAGE SUMMARY

TELE CO __017__ BASE __4E61__ CONT GRP __CGO__ ESS UNIT __MABELVALE__

	LINE	8-18-75	9-18-75	10-20-75					
DATE:		8-18-75	9-18-75	10-20-75					
MAIN STATION COUNT	A	21343	21449	21521					
MAIN STATION CHANGE	• B	408	106	72					
RIGHT HALF:									
RIGHT WORD CHANGE	C	-107	-216	-2063					
- PLANT ACTIVITY (RIGHT)	D	-(+256)	-(-64)	-(-2000)	-		-		-
NET RIGHT CHANGE	E	-363	-152	-63					
WORD CHANGE/MS CHANGE	X	-.89	-1.43	-.87					
(SEE NOTE)		—	NOTE 2	NOTE 3					
LEFT HALF:									
LEFT WORD CHANGE	F	-60	0	-512					
- PLANT ACTIVITY (LEFT)	G	- 0	- 0	-(-512)	-		-		-
NET LEFT CHANGE	H	-60	0	0					
WORD CHANGE/MS CHANGE	Y	-.15	0	0					
(SEE NOTE)		—	—	NOTE 4					
CUMULATIVE MS CHANGE	I	408	514	586					
EST MS GROWTH (TOT PERIOD)	J	1850 SEE NOTE 1	1850	1850					
% MS INPUT	K	22 %	27.8%	31.7 %	%		%		%
CUMULATIVE WD CHANGE (R)	L	107	323	2386					
CUMULATIVE WD CHANGE (L)	M	+ 30	+ 30	+ 286	+		+		+
TOTAL WORD CHANGE (R + L)	N	137	353	2672					
TOTAL (L) + (R) SPARE AT START OF PERIOD	O	7343 SEE NOTE 1	7343	7343					
% WORDS USED TO DATE	P	1.9 %	4.8 %	36.4 %	%		%		%
IS P LESS THAN K?	Z	YES	YES	NO (NOTE 4)					

WHERE:
B = A1-A2 = PREV A - NEW A
E = C - D
X = E ÷ B
H = F - G
Y = H ÷ B
I = TOTAL OF Bs
K = (I ÷ J) X 100
L = TOTAL OF Cs
M = TOTAL OF Fs ÷ 2
N = L + M
P = (N ÷ O) X 100

NOTES 1-4: REFER TO FIG. 16, PSVFY-3 FORM

Fig. 14—Word Usage Summary (4.02, 4.03)

(1) *Plus* — Plus:

$$\frac{+200}{-(+220)} = \frac{+200}{+(-220)} = \underline{\boldsymbol{-20}}$$

(2) *Minus* — Plus:

$$\frac{-200}{-(+220)} = \frac{-200}{+(-220)} = \underline{\boldsymbol{-420}}$$

(3) *Plus* — Minus:

$$\frac{+200}{-(-220)} = \frac{+200}{+(+220)} = \underline{\boldsymbol{+420}}$$

(4) *Minus* — Minus:

$$\frac{-200}{-(-220)} = \frac{-200}{+(+220)} = \underline{\boldsymbol{+20}}$$

Fig. 15—Algebraic Subtraction (4.02)

(1) *Plus* — Plus: If word change is $+200$ and plant activity is $+220$, then:

$$\frac{+200}{-(+220)} = \frac{+200}{+(-220)} = \underline{\boldsymbol{-20}}$$

(2) *Minus* — Plus: If word change is -200 and plant activity is $+220$, then:

$$\frac{-200}{-(+220)} = \frac{-200}{+(-220)} = \underline{\boldsymbol{-420}}$$

(3) *Plus* — Minus: If word change is $+200$ and plant activity is -220, then:

$$\frac{+200}{-(-220)} = \frac{+200}{+(+220)} = \underline{\boldsymbol{+420}}$$

(4) *Minus* — Minus: If word is -200 and plant activity is -220, then:

$$\frac{-200}{-(-220)} = \frac{-200}{+(+220)} = \underline{\boldsymbol{+20}}$$

Fig. 15—Algebraic Subtraction (4.02)

PSVFY-3

LINK LIST RECORD
ABNORMAL MEMORY CONDITION

TELE CO **017** — BASE **4E61** — CONT GRP **CGO** — ESS UNIT **Mabelvale**

NOTE NO.	DATE	CONDITION	CAUSE OR CORRECTIVE ACTION	IS PROBLEM CORRECTED
1	8-18-75	Marketing forecasted a growth of 1850 main stations for the engineering period.		
	FOR FORM PSVFY-4	There were 5467 right half words and 3752 left half words on 7-20-75 which was the start of the engineering period.	START OF PERIOD, NO ACTION REQUIRED	X
		Total spare L+R is:		
		0 + 5467 + 3752/2 = 7343		
		at start of period		
		There are no unlinked Mods		
2	9-18-75	Small custom centrex group input during the month which could not be abbreviated	NONE REQUIRED	X
	FOR FORM PSVFY4			
3	10-20-75	Plant reserved two 1000 blocks for DN subtranslator growth - was anticipated	NONE REQUIRED	X
4	10-20-75	Plant Also seized a UTF subtranslator - also anticipated (256 TN = 512 LHW)	NONE REQUIRED	X
	ALL FOR FORM PSVFY-4	The % of spare words used this month is greater than the % of MS input due to the above two plant activities - condition should be temporary	WILL CONTINUE TO MONITOR	
5	10-20-75	Sample indicated 70% ABB LEVEL OVERALL	FOUR of the sampled orders were for unabbreviatable speed calling customers which are not abbreviatable. without these there is a 90% ABB efficiency.	
	FOR FORM PSABB-1		WILL CONTINUE TO MONITOR	

Fig. 16— Link List Record—Abnormal Memory Condition
Sample Form (4.02, 4.03)

PSVFY-5   PERCENT UTILIZATION OF TRANSLATION WORDS

TELE CO ___017___ BASE _4E61_   CONT GRP __CGO__   UNIT _Mabelvale_

NO. PS FRAMES X 8 = NO. UNDUPLICATED PS MODS   (A) ___48___

GENERIC INSTALLED = SP/CC CTX   (B) _CC-CTX8 ISS 3_

MODS REQUIRED FOR GENERIC (SEE TABLE E)   (C) ___37___

(A) – (B) = TRANSLATION MODS AVAILABLE   (D) ___11___

(D) X 8192 = TOTAL RIGHT TRANSLATION WORDS AVAILABLE (E) _90112_

(D) X 4096 = TOTAL LEFT TRANSLATION WORDS AVAILABLE (F) _45056_

NO. MODS LINKED*   (G) __11__   __11__

NO. ACTIVE TW:
    RIGHT = (G) X 8192   (H) _90112_   90112
    LEFT = (G) X 4096   (I) _45056_   45056

WORDS ON LINK LIST (FROM PSVFY-1)
    TOT. RIGHT   (J) _5136_   4946
    TOT. LEFT/2   (K) _1846_   1846

PERCENT USED:
    RIGHT $\frac{(H) - (J)}{(H)}$ X 100%   (L) | 94.3% | | 94.5% | | % | | % | | % | | % |

    LEFT $\frac{(I) - (K)}{(I)}$ X 100%   (M) | 95.9% | | 95.9% | | % | | % | | % | | % |

PERCENT WORKING:
    RIGHT $\frac{(H) - (J)}{(E)}$ X 100%   (N) | 94.3% | | 94.5% | | % | | % | | % | | % |

    LEFT $\frac{(I) - (K)}{(F)}$ X 100%   (O) | 95.9% | | 95.9% | | % | | % | | % | | % |

DATE: (P) 8-18-75   9-18-75

*OBTAIN FROM NETWORK MAINTENANCE

Fig. 17—Percent Utilization of Translation Words
(4.04)

PSABB-1

DAILY/WEEKLY CHECK FOR ABB

TELE CO __017__   BASE __4E61__   CONT GRP __CGO__   ESS UNIT __Mabelvale__

DATE: __10-20-75__ (A)   PERIOD: __10-6-75__   THROUGH __10-10-75__ (B)
                                   START DATE   END DATE

TOTAL ORDERS SAMPLED: __20__ (C)   WEEK __1__ OF __4__

UNABBREVIATED CLASSES:				ABB STATUS*		
(D)	(E)	(F)	(G)	(H)		(I)
DN	LEN	LCC	FEATURE/OPTION	DN	LEN	QUANTITY
727-6530	02-212-1-02	1FR	Touch Tone, Call Fwd, Call Wait	U	A	2
725-4863	03-203-2-14	1MB	Dial Pulse, Speed Call	A	U	4

* A = ABBREVIATED $\frac{20-6}{20} \times 100\% = 70\%$ TOT. COL. (I). __6__

U = UNABBREVIATED

% ABB = __70%__

see note 5 on PSVFY-3

Fig. 18—Daily/Weekly Check for Abbreviation (4.07)

A

PSABB-2 ABBREVIATED CLASS CODE CHECK DATE: *6-15-75*

TELE CO __*017*__ BASE __*4E 61*__ CONT GRP __*CGO*__ ESS UNIT __*Mabelvale*__

DIRECTORY NO.	LEN	LCC	FEATURE OR OPTION	ORIG YES NO (1)	(A) #	TERM YES NO (2)	(B) #	(C) TOTAL
				ABBREVIATED CLASS CODES				LINES
779-1234	*00-204-2-01*	*1FR*	*Dial Pulse (DP)*		✓		✓	*30*

B

779-1234	*00-204-2-01*	*1FR*	*Dial Pulse (DP)*	*YES*	✓ *30*	*YES*	✓ *30*	*30*

C

779-1234	*00-204-2-01*	*1FR*	*Dial Pulse (DP)*	*YES*	✓ *30*	*YES*	✓ *30*	*30*
779-3346	*01-201-3-02*	}	*Touch Tone (TT)*	*YES*	✓ *15*	*YES*	✓ *15*	*15*
779-6601	*01-302-2-03*	}	*TT-Call Waiting*	*YES*	✓ *10*	*YES*	✓ *10*	*10*
779-7031	*01-321-1-05*	↓	*DP-Call Waiting*	*No*	*0*	*No*	*0*	*5*
779-4123	*02-105-0-06* *1MB*		*DP*	*YES*	✓ *10*	*YES*	✓ *10*	*10*
779-5000	*03-205-1-00*	}	*TT*	*No*	*0*	*YES*	✓ *4*	*4*
779-3331	*01-024-0-15*	}	*DP-Call Forward*	*YES*	✓ *3*	*No*	*0*	*3*
779-2148	*03-123-0-14*	↓	*TT-Call Forward*	*No*	*0*	*No*	*0*	*1*
779-2201	*01-301-3-04* *1MR*		*DP*	*No*	*0*	*YES*	✓ *1*	*1*
779-8132	*00-026-1-14*	}	*TT*	*No*	*0*	*YES*	✓ *1*	*1*
779-4334	*03-105-0-13*	↓	*DP-Speed Calling*	*No*	*0*	*No*	*0*	*2*
779-6607	*02-024-1-02* *2MR*		*TT*	*No*	*0*	*No*	*0*	*1*

D

TOTAL				*68*		*71*		*83*
% UTIL. (overall ABB)				*82%*		*86%*		*84%*

Fig. 19—Sample Abbreviated Class Code Check Form (Stages A Through D) (4.08)

6-15-75

PSABB-2   ABBREVIATED CLASS CODE CHECK   DATE: **6-15-75**

TELE CO __017__   BASE __4E61__   CONT GRP __C60__   ESS UNIT __Mabelvale__

DIRECTORY NO.	LEN	LCC	FEATURE OR OPTION	ORIG YES NO (1)	(A) #	TERM YES NO (2)	(B) #	(C) TOTAL
779-1234	00-204-2-01	IFR	Dial Pulse (DP)	Yes	30	Yes	30	30
779-3346	01-201-3-02	⟨	Touch Tone (TT)	Yes	15	Yes	15	15
779-6601	01-302-2-03	⟨	TT- Call Waiting	Yes	10	Yes	10	10
779-7031	01-321-1-05	↓	DP- Call Waiting	No	0	No	0	5
779-4123	02-105-0-06	IMB	DP	Yes	10	Yes	10	10
779-5000	03-205-1-00	⟨	TT	No	0	Yes	4	4
779-3331	01-024-0-15		DP- Call Forward	Yes	3	No	0	3
779-2148	03-123-0-14	↓	TT- Call Forward	No	0	No	0	1
779-2201	01-301-3-04	IMR	DP	No	0	Yes	1	1
779-8132	00-026-1-14	⟨	TT	No	0	Yes	1	1
779-4334	03-105-0-13	↓	DP- Speed Calling	No	0	No	0	2
779-6607	02-024-1-02	2MR	TT	No	0	No	0	1
TOTAL					68		71	83
% UTIL. (overall ABB)					82%		86%	84%

Fig. 20—Completed Abbreviated Class Code Check Form (4.08)

LINK LIST SUMMARY
RECORD

TELE CO _____ BASE _____ CONT GRP _____ ESS UNIT _____

HOLE SIZE		QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	QTY (DEC)	TOTAL SPARE	LINE AND/OR HOLE SIZE
DATE:														
PREPARER														
	1													1
	2													2
	3													3
	4													4
	5													5
	6													6
	7													7
	8													8
	9													9
	10													10
	11													11
	12													12
	13													13
	14													14
RIGHT HALF WORDS (23-BIT)	15													15
	16													16
	17													17
	18													18
	19													19
	20													20
	21													21
	22													22
	23													23
	24													24
	25													25
	26													26
	27													27
	28													28
	29													29
	30													30
	31													31
TOTAL	1-31													1-31
TOTAL	32+													32+
TOTAL	RIGHT													1-32+
CHANGE														CHANGE
SEE NOTE														NOTE
	2													2
	4													4
	6													6
	8													8
	10													10
	12													12
LEFT HALF WORDS (14-BIT)	14													14
	16													16
	18													18
	20													20
	22													22
	24													24
	26													26
	28													28
	30													30
TOTAL	2-30													2-30
TOTAL	32+													32+
TOTAL	LEFT													2-32+
CHANGE														CHANGE

PSVFY-2

LINK LIST RECORD
BLOCK SIZES 32 OR GREATER

TELE CO _____ BASE _____ CONT GRP _____ ESS UNIT _____

DATE:												
PS TW HALF	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
TOTAL BLOCKS												
B L O C K S I Z E												
TOTAL 32+												

LINK LIST RECORD
ABNORMAL MEMORY CONDITION

TELE CO ———————— BASE ———————— CONT GRP ———————— ESS UNIT ————————

NOTE NO.	DATE	CONDITION	CAUSE OR CORRECTIVE ACTION	IS PROBLEM CORRECTED

WORD USAGE SUMMARY

TELE CO _____ BASE _____ CONT GRP _____ ESS UNIT _____

	LINE											
DATE:												
	LINE											
MAIN STATION COUNT	A											
MAIN STATION CHANGE	B											
RIGHT HALF:												
RIGHT WORD CHANGE	C											
− PLANT ACTIVITY (RIGHT)	D	−		−		−		−		−		−
NET RIGHT CHANGE	E											
WORD CHANGE/MS CHANGE	X	/////		/////		/////		/////		/////		/////
(SEE NOTE)												
LEFT HALF:												
LEFT WORD CHANGE	F											
− PLANT ACTIVITY (LEFT)	G	−		−		−		−		−		−
NET LEFT CHANGE	H											
WORD CHANGE/MS CHANGE	Y	/////		/////		/////		/////		/////		/////
(SEE NOTE)												
CUMULATIVE MS CHANGE	I											
EST MS GROWTH (TOT PERIOD)	J											
% MS INPUT	K	%		%		%		%		%		%
		/////	/////	/////	/////	/////	/////					
CUMULATIVE WD CHANGE (R)	L											
CUMULATIVE WD CHANGE (L)	M	+		+		+		+		+		+
TOTAL WORD CHANGE (R + L)	N											
TOTAL (L) + (R) SPARE AT START OF												
PERIOD	O											
% WORDS USED TO DATE	P	%		%		%		%		%		%
		/////	/////	/////	/////	/////	/////					
IS P LESS THAN K ?	Z											

WHERE:

$B = A1 - A2 = PREV\ A - NEW\ A$

$E = C - D$

$X = E \div B$

$H = F - G$

$Y = H \div B$

$I = TOTAL\ OF\ B_s$

$K = (I \div J)\ X\ 100$

$L = TOTAL\ OF\ C_s$

$M = TOTAL\ OF\ F_s \div 2$

$N = L + M$

$P = (N \div O)\ X\ 100$

PERCENT UTILIZATION OF TRANSLATION WORDS

TELE CO _____ BASE _____ CONT GRP _____ UNIT _____

NO. PS FRAMES X 8 = NO. UNDUPLICATED PS MODS   (A) _____

GENERIC INSTALLED = SP/CC CTX   (B) _____

MODS REQUIRED FOR GENERIC (SEE TABLE B)   (C) _____

(A) - (B) = TRANSLATION MODS AVAILABLE   (D) _____

(D) X 8192 = TOTAL RIGHT TRANSLATION WORDS AVAILABLE   (E) _____

(D) X 4096 = TOTAL LEFT TRANSLATION WORDS AVAILABLE   (F) _____

NO. MODS LINKED*   (G) _____ _____ _____ _____ _____ _____

NO. ACTIVE TW :

    RIGHT = (G) X 8192   (H) _____ _____ _____ _____ _____ _____
    LEFT = (G) X 4096   (I) _____ _____ _____ _____ _____ _____

WORDS ON LINK LIST (FROM PSVFY-1)

    TOT. RIGHT   (J) _____ _____ _____ _____ _____ _____
    TOT. LEFT/2   (K) _____ _____ _____ _____ _____ _____

PERCENT USED:

    RIGHT $\dfrac{(H) - (J)}{(H)}$ X 100%   (L) ___% ___% ___% ___% ___% ___%

    LEFT $\dfrac{(I) - (K)}{(I)}$ X 100%   (M) ___% ___% ___% ___% ___% ___%

PERCENT WORKING:

    RIGHT $\dfrac{(H) - (J)}{(E)}$ X 100%   (N) ___% ___% ___% ___% ___% ___%

    LEFT $\dfrac{(I) - (K)}{(F)}$ X 100%   (O) ___% ___% ___% ___% ___% ___%

DATE: (P) _____ _____ _____ _____ _____ _____

*OBTAIN FROM NETWORK MAINTENANCE

DAILY/WEEKLY CHECK FOR ABB

TELE CO _____ BASE _____ CONT GRP _____ ESS UNIT _____

DATE: _____ (A) PERIOD: _____ THROUGH _____ (B)
                              START DATE   END DATE

TOTAL ORDERS SAMPLED: _____ (C) WEEK ____ OF ____

UNABBREVIATED CLASSES:				ABB STATUS*		
(D)	(E)	(F)	(G)	(H)		(I)
DN	LEN	LCC	FEATURE/OPTION	DN	LEN	QUANTITY

* A = ABBREVIATED
  U = UNABBREVIATED

TOT. COL. (I). _____

% ABB = [   ]

ABBREVIATED CLASS CODE CHECK

DATE: _____

TELE CO _____ BASE _____ CONT GRP _____ ESS UNIT _____

| DIRECTORY NO. | LEN | LCC | FEATURE OR OPTION | ABBREVIATED CLASS CODES | | | | LINES |
				ORIG YES NO (1)	(A) #	TERM YES NO (2)	(B) #	(C) TOTAL