

TRANSLATION SPARE WORD ADMINISTRATION  
NETWORK ADMINISTRATION  
NO. 1 ELECTRONIC SWITCHING SYSTEM

1. GENERAL

1.001 This Addendum supplements Section 231-070-425 Issue 3 December, 1981. Place this Addendum ahead of page 1 of the Section. This Addendum establishes Network Administration responsibilities between the Network Switching Administrator (NSA) and the Translation Administrator (TXA). . These responsibilities are described in detail in Section 780-125-005 NAC Responsibilities-Network Switching Administration and Section 780-125-005 summarizes each group's responsibility in this way. "The Translation Administrator performs the day to day utilization and tracking and the Network Switching Administrator performs the capacity determination [regarding memory] and interfaces with the traffic engineer." Refer to the above listed Sections for a detailed description for further breakdown of responsibilities.

1.002 This Addendum is issued by Southwestern Bell Telephone Co. to supplement procedures specified in the main Section. Inquiries on the content of this Addendum should be submitted to the General Headquarters Staff in accordance with Section 000-010-015 and its associated Addendum.

1.003 The main Section states that five general checks are required for memory administration but only discusses four of the five checks. The check that is not covered, "service order inputs", should be ignored. Service order reviews formerly associated with memory administration are no longer recommended in Bell System publications.

1.004 In the provision of memory, Network Design normally assumes an average abbreviation rate of approximately 95% for all lines and numbers. Offices that cannot meet this criteria will be reviewed with Network Design for modification of the expected level of abbreviation.

2. ABBREVIATED CLASS CODES

PRECUTOVER

(Add the following to Paragraph 2.02)

2.02 The Translation Administrator should obtain abbreviated results from Western Electric Co. at the earliest opportunity. This is accomplished during the building of line and number translations in the Translation Data Assembler (TDA) support program. The results should be compared with the criteria defined in Paragraph 1.09 and also determine that sufficient spare memory is available for the engineering period. Memory shortages may require modifications of the ESS 1502 and 1503 abbreviated class code forms for use in the TDA/TGP (Translation Growth Process) processes. If this means of resolution is required, the Support program intervals allocated to the building of line and number translations will normally be lengthened. In the case of TGP, another support program TRIMS (Translation Repack to Implement Memory Savings) can be used to resolve the abbreviation deficiency. TRIMS is discussed in detail under "Support Programs" in this addendum and in the main Section.

POSTCUTOVER

(Add the following to Paragraph 2.03)

2.03 Utilization of abbreviated class codes should be reviewed on an annual basis using Western Electric Co. support programs. Translation Area Analysis (TAA) should be used for this review. Three associated Western Electric support programs TAA, TRIMS, and Translations Retrofit Repack (TRR) are further defined in Part 4 of the main Section. Program selection is defined in Part 4 of this Addendum. Both the Network Switching Administrator and the Translation Administrator should be involved in the support program process.

(Add the following to Paragraph 2.04)

2.04 Abbreviated codes can be removed via the TRIMS program or locally via recent change. When a code is removed locally, that action must be preceded by a review to insure that it is not in use. This is accomplished through the use of the translations search procedure (XTRS) program. XTRS is further defined in Paragraphs 3.07 through 3.10 of the Main Section.

(Add the following to Paragraph 2.05)

2.05 The annual review of the ESS 1502/1503 forms discussed in the main Section is accomplished at the same time abbreviated class code utilization is reviewed (annually) per Paragraph 2.03. The support program used for the utilization review also produces replicas of the ESS 1502/1503 translators as defined in ESS memory.

(Add the following to Paragraph 2.06)

2.06 Memory activation of new abbreviated class codes required for the pending addition of new services, such as co-centrex,

Automatic Call Distribution (ACD), Electronic Tandem Switch (ETS, etc.), should precede line and number insertion into ESS memory by at least two weeks.

Also, their presence in memory should be confirmed as specified in the main Section at least one week before the insertion of lines and numbers. A "test" line and number should be inserted to Recent Change to confirm abbreviation for new codes is occurring as expected. When abbreviation is occurring as expected remove the "test" line and number. For LESS offices with RSS, word consumption should be taken into consideration. Abbreviated codes should be inserted and verified as described above. Other word requirements are described in Section 231-090-153 - Feature Document Operation with Remote Switching System Feature.

### 3. CONSERVATION OF WORDS

(Add the following to Paragraph 3.07)

3.07 As specified in Paragraph 2.04, of this Addendum XTRS must be used to confirm abbreviated class codes are not in use before they are removed from the ESS.

### 4. SUPPORT PROGRAMS

#### A. Translation Area Analysis

(Add the following to Paragraph 4.01)

4.01 The TAA program should be used to perform the annual abbreviated class code and associated ESS 1502/1503 form reviews. When the TAA results indicate abbreviated utilization may cause an exhaust of memory, the TRIMS support program should be requested. When TRIMS is required, it's use should be deferred until the next annual TAA if possible. Additional guidelines on

the use of TRIMS are provided in Paragraph 4.06 of the main Section. When the use of other TDRRSS (Translations Data Recovery and Reprocessing System Services) are desired they should be coupled with the annual TAA process. The need to use another program at a specific time should be considered an annual review. Multiple programs can be processed from one TAA run and result in a cost reduction when this occurs. TRIMS, however, should be processed only after a TAA review. Other TDRRSS programs not mentioned in the system BSP are as follows:

(a) MEFR (Mechanized ESS Feature Recovery)

Produces line and number translations as obtained from ESS memory. It can be used to (1) validate and purify office records and (2) load other systems such as LMOS and COSMOS.

(b) TAR (Translations Assignment Regeneration)

Produces trunking records (ESS 1200 series) and traffic register records (ESS 1400 series) as obtained from ESS memory. Also, the trunking translations can be compared to the ESS 69 library tape. Program output will indicate the differences.

All CPC TAR requests should be coordinated with the NSA and Network Design to ensure support program coupling is achieved.

(c) IACONV (No. 1ESS to No. 1AESS Conversion)

As the name implies, this program is used to convert No. 1 ESS to No. 1AESS. When this occurs, this is an ideal time to rectify poor abbreviation with the TRIMS program. The

improved abbreviation is applied to the 1A. This eliminates the 1E recent change freeze normally associated with a TRIMS run. Paragraph 4.05 discusses recent change freezes in more detail.

(d) TDD (Translations Data Disassembler)

TDD produces routing and charging (1300 series) and line and centrex records (1100 series) as obtained from ESS memory. The output provides an excellent tool for the Translation Administrator to verify office records without extensive verify messages and associated clerical time. The TDD should be coupled with every second TAA review (effectively every 2 years). A TDD should be requested with the next TAA if one has never been run in an office. A TDD more frequently is discouraged:

(e) ARS (Auxillary Retrofit System)

The ARS process is required in retrofitting/restarting to Issue 7 of Base 6 or Base 7. The ARS allows the translations to work with Issue 6 and Issue 7. The translations are packed into two spectrums. The data tables no longer required after retrofit are over written when Issue 7 is brought on-line.

(Add to Paragraph 4.05)

4.05 The TAA output contains a listing by block location and size of the available link list space. There is also a listing of the lost space in the office. Totals are provided for both. These totals can be used to evaluate the accuracy of the manual translations space review procedures.

B. Translation Repack to Implement  
Memory Savings

(Add the following to Paragraph 4.06)

4.06 When TRIMS is used, Network Design, Network Switching Administration, and Translation Administration should jointly complete the E-8086 questionnaire. Also, Western Electric consultaiton with the Translation Administrator during the TRIMS process should be specified. This is to insure that the desired abbreviated efficiency is obtained.

The TRIMS Expand facility is used to remove unused or under used abbreviated codes. TRIMS EXPAND will build auxiliary blocks for all users of a specified abbreviated code. After EXPAND the code entry is removed from the abbreviated code table.

Use of the TRIMS EXPAND function for abbreviated codes with significant quantities of users (more than 10) should be done with care. Use of the EXPAND function can mean that No. 1 ESS Recent Change Mapping could not be used at translation reload time. Subscribers in the mapped Recent Change Area which access abbreviated codes which were EXPANDED can experience service problems. TRIMS may have reused the abbreviated code and it may now have totally different features or services.

TRIMS can be requested to reserve a quantity of abbreviated codes for future use. Reserving of codes should be done with care. TRIMS cannot recover significant quantities of translations space unless there are unused abbreviated codes available. TRIMS also allows a USER limit to be specified. TRIMS will not build a new abbreviated code unless sufficient users are available to justify the new code. TRIMS will not automatically remove codes which have less than the specified quantity of users.

TRIMS can also be used to change Master and Auxiliary Master Head Table sizes.

(Add the following to Paragraph 4.08)

(b) The ESS 1502A, B and 1503 Forms data produced should be reviewed to determine that only tariffed features or feature combinations are present in the codes. Care should be taken to determine that code combinations are not duplicated.

4.08 (d) The multiline hunt analysis available from the TRIMS program should be requested and sent to the LNAC for review and corrective action.

C. Translation Retrofit Repack

(Add the following to Paragraph 4.10)

4.10 TRR can be used to convert small blocks of spare memory into a large block of spare memory. The program can resolve the lack of block size 32 or greater as discussed in Paragraph 5.03. TRIMS with repack can perform the same function in addition to improving abbreviated utilization. Paragraph 4.12 of the main Section provides criteria on determining when to use TRIMS.

TRR will attempt to repack the office translations into the smallest possible area. TRR will not repack the office with less than 1/2 or more than 1 and 1/2 modules on the available space link list. The available space will be located at any addresses within the designated translations spectrum. Any modules which are not linked to the available space list will be located adjacent to the generic modules. The pack will attempt to place an equal quantity of words in both the right and left half spectrums.

(Add the following to Paragraph 4.13)

4.13 When support program coupling involves a recent change freeze, the program requiring the freeze should be given first priority in the TDRRSS process (i.e., TRIMS would have priority over TDD).

(Add Paragraph 4.18)

4.18 For more detailed information on the support program process, refer to Western Electric Publication PA-591092 - "User's Manual for Translation Data Recovery and Reprocessing System".

## 5. ADMINISTRATION PROCEDURES

### PROGRAM STORE CONSUMPTION

(Add the following to Paragraph 5.03)

5.03 The main Section states that when a memory block of the exact size is not available, a memory block of the required size will be removed from a remaining large block. A FACT IMPORTANT TO REMEMBER IS THE LARGE BLOCK MUST BE IN THE SIZE RANGE OF 32 OR GREATER. When the specific size required in the 1 to 31 range does not exist and a block size of 32 or greater does not exist, the involved service order will be rejected. This condition must be considered during the monthly analysis of spare memory space as directed in the following paragraph.

(Add the following to Paragraph 5.06)

5.06 (a) As specified in the main Section available memory space will be verified in all offices on a monthly basis.

(b) As specified in Paragraph 2.03, the annual review of abbreviated codes should be accomplished via the use of TAA.

## 6. NETWORK ADMINISTRATION RESPONSIBILITIES

### PERIODIC CHECK

(Add the following to Paragraph (6.01)

6.01 As specified in Paragraph 5.06(a), available space will be reviewed in all offices on a monthly basis. This review should coincide with the monthly production of line and terminal counts. The monthly check and associated reports should be performed by the Translation Administrator. The VFY-SPACE messages should be obtained via the ESS dial-up or #2 SCCS. The XLCK is normally run after a Recent Change update. The XLCK should be obtained from the SCC. This guideline follows the 780-125-008 System BSP. Ideally, the TXA has the best idea of how much and what type of translation activity is placed on the ESS. The monthly report should be forwarded to the appropriate NSA and Network Designer. Paragraph 9.02 defines specific distribution. Periodically, the groups should review monthly changes and analyze future needs.

In the interest of providing meaningful data for all line serving offices, the report forms have been modified for additional measurements and analysis tools. The formulas to obtain the specific measurements are in Paragraph 6.17. The grounds for some of the changes are as follows.

(a) Percent translations words in use vs. percent main station capacity. Both of these values are incorporated in the revised PS-VFY-3A (Exhibit 1 of this Addendum). By comparing these two values or by using the graph SWB-MA-A (Exhibit 2 of this Addendum), the administrator will be able to check,

1) word consumption and probable exhaust and 2) abbreviation performance based on the monthly changes of both measurements. A stable level of word usage linked with an equal or greater change in the main station result should be indicative of good abbreviation. The Translation Administrator should anticipate, based on translation activity, noticeable changes in the word usage measurement. When exceptional word usage changes are not anticipated, a review of previous vs. current month spare memory needs to be initiated by the Translation Administrator (i.e., a 200 word block of spare memory in last months report does not exist in this month's report) consultation with maintenance should disclose the use of the excess memory. If not, the link list may have been broken.

- (b) A new computation incorporated is words in use per working mainstation. An example of this would be 327965 words in use divided by 38642 working main stations equals 8.5 words used per EMT. This figure can be compared to a manually derived figure of total words available per main station capacity. For example, 393216 total words available divided by the main station capacity of 40675 results in 9.7 available words per main station. The available words per main station will not change unless the MS capacity changes or mods are added to the translation area. (Either from GENEND repositioning PS addition.)

A simple rule applies here. The "used" figure should be less than the "available" figure. If not, memory exhaust appears to be eminent as working main stations approach the stated capacity. Given this condition, analysis and resolution should be initiated.

The "used" figure can also serve as an indicator of abbreviated efficiency. Actual results obtained from offices for prolonged periods indicate 4-8 words per main station for simple services and 9-16 words per main stations for complex services.

As actual percent abbreviations are determined for each office, a more precise range can be identified and used for the ongoing monitoring process. This computation can be expected to gradually increase as non-line and number translators have activity.

Gradual meaning the result is the same some months and increases no more than one tenth in others. With minimal non-line and number translation activity, and effective abbreviation, the "used" computation should actually decrease.

Results falling outside the historical ranges for a given office could indicate lost memory, poor abbreviation, or report production problems. If this occurs, analysis and resolution should be initiated.

(Add the following to Paragraph 6.03)

6.03 The "words per main station" criteria of 1 as specified in the system BSP has proven to be an elusive objective for certain offices. This is normally due to activity in translators that are not directly controlled by the amount of active lines and numbers. Examples of these situations are discussed in Paragraphs 5.04 and 5.05 of the main Section.

Given no activity in these types of translators, the activation of abbreviated main stations (both lines and numbers) could result in zero word usage. This is based on the fact that a primary translation word

(PTW) must be permanently associated with each installed line and each installed number. Whether lines and numbers are working or not, these words never appear spare. With this design, the activation of an abbreviated main station, simply results in changing the contents of the line and number PTW's to the following:

- (a) Line PTW = abbreviated code and directory number.
- (b) Directory number PTW = abbreviated code and line equipment number.

Given minimum or moderate activity in other types of translators and minimum complex services, the 1 words per main station is normally a good indicator.

#### A. Verify Space

(Add the following to Paragraph 6.04)

6.04 As discussed in Paragraph 6.01, the VFY-SPACE message should coincide with the monthly production of line and terminal counts.

#### B. Spare PS MOD Determination

(Add the following to Paragraph 6.14)

6.14 The XLCK program should be run by the maintenance forces at every update. The Translations Administrator should receive a copy of XLCK when it is run. The XLCK may be retained in lieu of the PS-VFY-1. Mods should be added to the link list on a 1 mod at a time basis. Normally, the VFY-SPACE output for 32 words can be reviewed and the determination can be made if a mod has been linked. Use the XLCK output to verify new linked memory and to also ensure the number of unlinked mods.

(Add the following to Paragraph 6.15)

6.15 The XLCK will also show any broken link lists and overlaps that occur in the machine. If overlaps occur on the XLCK, they should be corrected by the maintenance forces and the XLCK be re-run. Any XLCK with overlaps should not be used to determine unlinked memory as this may distort the results. The XLCK will also show large blocks of lost memory within linked translation area. Any large blocks should be reviewed. If the large blocks are sizable, a translations repack may need to be performed to correct this deficiency.

#### C. Determining Spare PS Words

(Add the following to Paragraph 6.16)

6.16 The PS-VFY forms have been redesigned to provide more meaningful data to the users. The new calculations are all listed in Paragraph 6.17.

#### D. Determining Words Per Main Station Used

(Change Paragraph 6.17 to read)

6.17 This Paragraph lists all instructions on completing the revised PS-VFY-4. All arithmetic calculations are listed below. Exhibit 1 of this Addendum is the updated PS-VFY-4.

- (a) Record on line A the number of working main stations from the current line and terminal report.
- (b) Subtract the previous EMT count from the current (Line A) and enter the change on line B. Be sure to include a minus (-) sign if a negative number results.

- (c) Record on lines B(1) and D(1) the total right half words and left half words spare respectively from the PS-VFY-3.
- (d) Record on lines C and E the change in words for right half and left half respectively.
- (e) Divided the change in words (line C and E) by the change in main stations (line B) for both right and left half words respectively.
- (f) Enter on line H the current limiting EMT value as obtained from the Network Design Order or the D&F charts. This value will remain constant until the EMT capacity is revised.
- (g) Enter on line I the result of line A divided by line H by 100.
- (h) To obtain line J, subtract line B(1) from line O. This value is the total right words used.
- (i) To obtain line L, subtract line D(1) from line P. This value is the total left words used.
- (j) The value of line N is the total R&L words used. Enter on line N the total of line J and line L.
- (k) Use the following formula to compute lines O, P, and R. These lines are for total words available (R, L, and R&L). These lines will not change unless program stores are added or the value of set card GENEND changes.  
 [(Set card PSF \*8) - (Set card GENEND +1)]  
 \*8192 = number of words available (one side only)
- (l) Line O is the value of (5) above. This is the total number of right half (22 bit) program store words available for translations.
- (m) Line P is the value of (5) above. This is the total number of left half (14 bit) program store words available for translations.
- (n) Line R is the sum of Line O and P. This is the total left and right half program store words available for translations.
- (o) Line S is line J divided by line O x 100.
- (p) Line T is line L divided by line P x 100.
- (q) Line U is line N divided by Line R x 100.
- (r) Line V(1) is line J divided by Line A.
- (s) Line V(2) is line L divided by Line A.
- (t) Lines W(1) and W(2) is an estimated exhaust date based on words used per main station. To calculate W(1), take line B(1) and divide by V(1) (right half). This gives the number of EMT's that could be added if the office continues use words at the current rate. Based on the number of EMT's the office is growing, calculate an exhaust date. Use the same technique to calculate W(w), only using D(1) and V(2) as variables.
- (u) Line X is [Line J + (Line L/2)] divided by Line A. This is the number of translation words per EMT. Line J is the total Right Half words used and Line L is the total Left

Half words used. Since 2 left half words are required to make 1 translation word, Line L is divided by 2.

(Add the following to Paragraph 6.18)

6.18 If the PS-VFY-5 is desired, the Translations Administrator should manually complete it.

(e) Network Design should be notified of memory exhaust as soon as that condition becomes apparent to the NSA. Normal equipment additions require a minimum one year period so notification prior to the 90% usage level is usually required.

(Add Part 8)

#### 8. PLOTTING MS CAPACITY VS TW CAPACITY

8.01 A new graph has been added to the memory administration process. The graph will show a pictorial representation of % MS capacity vs. % TW capacity. If this graph is desired, it should be manually produced by the TXA. Exhibit 2 of this Addendum is Form SWB-MA-A that can be used to plot the information on a monthly basis. If this Form is required it can be made locally by using Form S-9943 and adding the necessary information. Once locally produced additional copies can be made as required. Retention and distribution guidelines are included in Part 9 of this Addendum.

(Add Part 9)

#### 9. RETENTION AND DISTRIBUTION GUIDELINES

9.01 The following are minimum retention guidelines for the PS-VFY memory administration reports.

- |                 |                           |
|-----------------|---------------------------|
| 1) PS-VFY-1     | 12 month rolling period   |
| (or XLCK)       |                           |
| 2) PS-VFY-2     | 12 month rolling period   |
| 3) PS-VFY-3     | 12 month rolling period   |
| 4) PS-VFY-4     | Current and previous year |
| 5) PS-VFY-5     | Current and previous year |
| (optional)      |                           |
| 6) PS-VFY-6     | Current and previous year |
| 7) SWB-MA-A     | Current and previous      |
| (optional)      | chart                     |
| 8) Abbreviation | Three years               |
| Statistics      |                           |

9.02 The following are the distribution guidelines for the PS-VFY memory administration forms.

- |                 |                         |
|-----------------|-------------------------|
| 1) PS-VFY-1     | Distribution to NSA     |
| (or XLCK)       |                         |
| 2) PS-VFY-3     | Distribution to NSA     |
| 3) PS-VFY-3     | Distribution to NSA     |
| 4) PS-VFY-4     | Distribution to NSA and |
|                 | Network Design          |
| 5) PS-VFY-5     | Retain by TXA           |
| (optional)      |                         |
| 6) PS-VFY-6     | Distribution to NSA and |
|                 | Network Design          |
| 7) SWB-MA-A     | Retain by TXA           |
| (optional)      |                         |
| 8) Abbreviation | Distribution to NSA and |
| Statistics      | Network Design          |

9.03 The abbreviations Statistics from the Western Electric Support Programs should be retained for a three year period by the TXA. A copy of the abbreviation statistics should also be retained by the NSA and Network Design for a three year period. This information should be kept in close proximity to the memory administration reports.

EXHIBIT 1

REVISED PS-VFY-4

OFFICE  
PSVfy-4

NO 1 FSS  
WORD USAGE SUMMARY

! DATE	!	!	!	!
!	!	!	!	!
!	!LINE!	!	!	!
!	!	!	!	!
!MAIN STATION COUNT	!A	!	!	!
!	!	!	!	!
!XCLK REVISED	!A(1)	!	!	!
!	!	!	!	!
!MAIN STATION CHANGE	!B	!	!	!
!	!	!	!	!
!RIGHT HALF	!B(1)	!	!	!
!	!	!	!	!
! RIGHT WORD CHANGE	!C	!	!	!
!	!	!	!	!
! WORD CHANGE/MS CHANGE	!D	!	!	!
!	!	!	!	!
!LEFT HALF	!D(1)	!	!	!
!	!	!	!	!
! LEFT WORD CHANGE	!E	!	!	!
!	!	!	!	!
! WORD CHANGE/MS CHANGE	!F	!	!	!
!	!	!	!	!
!EST MS GROWTH (TOT. PERIOD)	!H	!	!	!
!	!	!	!	!
!% MS GROWTH	!I	!	!	!
!	!	!	!	!
!CUMULATIVE WORD CHANGE (R)	!J	!	!	!
!	!	!	!	!
!CUMULATIVE WORD CHANGE (L)	!L	!	!	!
!	!	!	!	!
! TOTAL WORD CHANGE (R+L)	!N	!	!	!
!	!	!	!	!
!TOTAL (P) SPARE AT START OF PERIOD	!O	!	!	!
!	!	!	!	!
!TOTAL (L) SPARE AT START OF PERIOD	!P	!	!	!
!	!	!	!	!
!TOTAL (R+L) AT START OF PERIOD	!R	!	!	!
!	!	!	!	!
!% WORDS (R) USED TO DATE	!S	!	!	!
!	!	!	!	!
!% WORDS (L) USED TO DATE	!T	!	!	!
!	!	!	!	!
!% TOTAL WORDS (R+L) USED TO DATE	!U	!	!	!
!	!	!	!	!
!WORDS USED PER FMT (RIGHT)	!V(1)	!	!	!
!	!	!	!	!
!WORDS USED PER FMT (LEFT)	!V(2)	!	!	!
!	!	!	!	!
!ESTIMATED EXHAUST (RIGHT)	!W(1)	!	!	!
!	!	!	!	!
!ESTIMATED EXHAUST (LEFT)	!W(2)	!	!	!
!	!	!	!	!
!TRANSLATION WORDS USED PER FMT	!X	!	!	!
!	!	!	!	!

EXHIBIT 2

FORM SWB-MA-A

