MEMORY ADMINISTRATION
NETWORK ADMINISTRATION
NO 1A ELECTRONIC SWITCHING SYSTEM

1. GENERAL

1.001 This Addendum supplements Section 231-070-427 Issue 1 June 1980. Place this Addendum ahead of page 1 of the main Section. This addendum establishes Network Administration responsibilities between the Network Switching Administration (NSA) and the Translation Administrator (TXA). These responsibilities are described in detail in the Section 780-125-005 (Paragraph 2.12) NAC Responsibilities-Network Switching Administration and Section 780-125-008 (Paragraphs 4.06-4.07) NAC Responsibilities-Translations Administration. Section 780-125-005 summarizes each groups responsibilities 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 BSP Sections for a detailed description on the division 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.

3. MEMORY ADMINISTRATION

(Add the following to Paragraph 3.07)

3.07 The management of the translation area and associated reports will be the responsibility of the Translation Administrator. Monthly monitoring will be performed by the TXA as defined in Paragraphs 3.09, 3.10, and 3.12 of the main Section. The NSA will be directly involved in memory capacity as defined in Paragraph 3.11 of the main Section.

(Add the following to Paragraph 3.08)

3.08 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", needs to be ignored. Service Order reviews formerly associated with memory administration are no longer recommened in Bell System publications.

(Add the following to Paragraph 3.09)

3.09 In the provision of memory, Network Design normally assumes an 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.

(Add the following to Paragraph 3.14)

3.14 The TXA will obtain abbreviation results from the Western Electric Co. at the earliest opportunity. This is accomplished during the building of line and number translations in the TDA (Translations

Data Assembler) support program. The result will be compared with the criteria defined in Paragraph 3.09 and also determine that sufficient 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 will normally be lengthened. In the case of TGP, another support program, TRIMS (Translations 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 the main Section.

B. Post-Cutover

(Add the following to Paragraph 3.15)

3.15 Utilization of abbreviated class codes will be reviewed on an annual basis using the Western Electric support program process. TAA (Translations Area Analysis) will be used for this review. Three Western Electric support programs TAA, TRIMS, and TRR (Translations Retrofit Repack) are further defined in Paragraphs 4.07 through 4.17. Both the Network Switching Administrator and the Translation Administrator will be involved in the support program process.

(Add the following to Paragraph 3.16)

3.16 Abbreviated class codes can be removed via the TRIMS support program or locally via recent change. When a code is removed locally, that action must be preceded by a review to ensure that it is not in use. This is accomplished through the use of the translations search program (XTRS). XTRS is further defined in Paragraphs 3.19 through 3.24 of the main Section.

(Add the following to Paragraph 3.17)

3.17 The annual review of the ESS 1502/1503 forms discussed in the main Section will be accomplished at the same time abbreviated class code utilization is reviewed (annually) per Paragraph 3.15. 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 3.18)

3.18 Memory activation of new abbreviated class codes required for the pending addition of new services, such as CO-Centrex, ACD (Automatic Call Distribution), ETS (Electronic Tandem Switch), 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 in Recent Change to confirm abbreviation is occurring as expected. When abbreviation is confirmed, remove the "test" line and number. For 1AESS offices with RSS, word consumption should be taken into consideration. Abbreviated codes should be inserted and verified as described above. Other word requirements are detailed in Section 231-090-153 Feature Documents, Operation with Remote Swtiching System Feature.

(Add the following to Paragraph 3.19)

3.19 As specified in Paragraph 3.16, XTRS must be used to confirm abbreviated class codes are not in use before they are to be removed from the ESS.

4. ADMINISTRATION PROCEDURES

PROGRAM STORE CONSUMPTION

(Add the following to Paragraph 4.03)

4.03 The main Section states that when a block of memory of the exact size required 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 4.06)

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

(d) As specified in Paragraph 3.15, the annual review of abbreviated codes will be accomplished via the use of TAA.

SUPPORT PROGRAMS

(Add the following to Paragraph 4.07)

4.07 The TAA program will be used to perform the annual abbreviated class code and associated ESS 1502/1503 review. When the TAA results indicate abbreviated utilization may cause an exhaust of memory, the TRIMS support program needs to be requested. When TRIMS is required, it's use should be deferred to the next annual review if possible. Additional guidelines on the use of TRIMS are provided in Paragraph 4.10 of the main Section. If the use of other Western Electric in TDRRSS (Translation Data Recovery and Reprocessing System Services) programs 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 run from one TAA run and result in a cost reduction when this occurs. Other TDRRSS programs not mentioned in the main Section 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 pruify office records and
2. load other systems such as COSMOS or LMOS.

(b) TAR (Translation 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 on a mechanized basis to the latest ESS 69 library tape. Program output will indicate the differences.

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

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

As the name implies, this program is used to convert No. 1ESS to No. 1AESS. During the conversion process is an excellent time to rectify poor abbreviation with the TRIMS program.

The improved abbreviation is applied only to the 1A. This in turn eliminates the 1E recent change curtailment normally associated with TRIMS. Paragraph 4.17 discusses recent change freezes in more detail.

(d) TDD (Translations Data Disassembler)

TDD produces routing and charging records (1300 series) and line and centrex records (1100 series) as obtained from ESS memory. The output provides an excellant tool for the TXA 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.

A. Translation Area Analysis (TAA)

(Add the following to Paragraph 4.08)

4.08 As previously stated, TAA will be used on an annual basis.

(Add the following to Paragraph 4.09)

4.09 The TAA output contains a listing by block location and size of the available link list space. These 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 (TRIMS)

(Add the following to Paragraph 4.10)

4.10 When TRIMS is used, Network Design, Network Switching Administration, and Translation Administration should jointly complete the E-8086 Questionnaire. Also, Western Electric consultation with the Translation Administrator during the TRIMS process should be specified. This is intended to ensure 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 abbreviation code. After EXPAND the code entry is removed from the abbreviated code table. Use of the TRIMS EXPAND facility in a No. 1A ESS office does not preclude the use of the Recent Change Mapping Library Program. The subscribers in the Recent Change Area do not retain their abbreviated codes during mapping.

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 abbreviation 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 4.12)

(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.

4.12 (e) The multi-line hunt analysis produced by the TRIMS program should be requested and sent to the Line and Number Administrator for review and corrective action.

C. Translation Retrofit Repack (TRR)

(Add the following to Paragraph 4.14)

4.14 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. TRIMS with repack can perform the same function in addition to improving abbreviated utilization. Paragraph 4.16 of the main Section provides criteria on determining when to use TRIMS. TRR will attempt to repack the office translations into the smallest possible High and/or Low Unduplicated Call Store (UCS) Area. TRR will not repack the office with less than 30,000 words on the available space link list. After satisfying the available space requirements, spare words are added until an USC boundary is reached. Any UCS space above these requirements will be located adjacent to the Duplicated Call Store area and it will not appear on the available space list. For 1AE7 and later generics TRR will attempt to conserve LUCS (Low Numbered K-Codes for Translations) space by making maximum use of the HUCS (High Numbered K-Codes for Translations) space available. All translators which can be HUCS will be packed in the HUCS area. When the HUCS area is filled the remainder of the translations will be packed in the LUCS area.

(Add the following to Paragraph 4.17)

4.17 When support program coupling involves a recent change freeze, the program requiring the freeze should be given first priority in the TDRRSS process.

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. PERIODIC CHECK

(Add the following to Paragraph 5.01).

5.01 As specified in Paragraph 4.06(a), available space will be reviewed in all offices on a monthly basis. The Translation Administrator should obtain the VFY-SPACE output from the ESS dial-up or through the #2 SCCS. The XLCK should be obtained from the SCC. The review should coincide with the monthly production of line and terminal counts. The monthly check and associated reports should be performed by the TXA. These guidelines follow the procedures included in Section 780-125-008. Ideally, the Translations Administrator has the best idea of how much and what type of translation activity is placed on the ESS. The monthly reports should be forwarded to the appropriate NSA and Designer. Paragraph 7.02 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 arithmetic calculations to obtain all form entries are provided in Paragraph 5.09. 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). By comparing these two values or by using graph SWB-MA-A (Exhibit 2) TXA 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 station result should be indicative of good abbreviation. The Translations Administrator should anticipate, based on translation activity, noticeable changes in the word usage measurements. When exceptional word usage changes are not anticipated, a review of previous vs. current month spare memory needs to be initiated by the Translations Administrator (i.e; a 200 word block of spare memory in last month's 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 main station. 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 Unduplicated Call Stores (set card CSU) are added.

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 projected EHT capacity. Given this condition, analysis and resolution must 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 station 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 com-

putation 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 defined ranges could indicate lost memory, poor abbreviation, or report production problems. If this occurs, analysis and resolution should be initiated.

(Add the following to Paragraph 5.03)

5.03 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 4.04 and 4.05.

Given no activity in these types of translators, the activation of abbreviated main stations (both line 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 to be 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 "word per main station" measurement is normally a good indicator.

(Add the following to Paragraph 5.04)

5.04 New memory should be added to the link list in increments of 8192 translation words at a time. Spare memory should not be added to the link list until one of the following conditions occur:

(a) Spare linked words in block sizes of 32 or greater are nearing exhaust.
(b) A block of memory larger than any presently available is required for translation input.

Maintenance personnel should advise the TXA as each block of memory is added to the link list.

A. Spare Linked Memory

(Add the following to Paragraph 5.05)

5.05 As discussed in Paragraph 5.01, the VFY-SPACE Message should coincide with the monthly production of line and terminal counts.

B. Unlinked Memory

(Add the following to Paragraph 5.07)

5.07 The use of XLCK to identify unlinked memory should coincide with the monthly production of line and terminal counts and the monthly identification of linked memory. The XLCK can be retained in lieu of the PS-VFY-2A.

(Add the following to Paragraph 5.08)

5.08 The XLCK will be run over the entire address range for all Unduplicated Call Stores based on set card CSU. The XLCK should be verified, when received, that it was run over the entire translation area. See Figure 1 of the main Section for the address spectrum of all K-Codes (Issue 6 and prior).

The XLCK must be reviewed to determine if large blocks of lost memory or holes are present in the translation area. This excludes those unlinked spare blocks. If these large blocks are present, maintenance forces have the capability to return them to the link list. By utilizing XLCK to aid in recovering lost memory, the translations area remains relatively consolidated.

(Change Paragraph 5.09 to read)

5.09 The PS-VFY-3A has been changed to provide more meaningful data. The line calculations are listed below for the PS-VFY-3A. Some of the lines are identical to those covered in the main Section.

(a) Main Station Count - Record on line A the most current total main station count available. This count should coincide with the production of the VFY-SPACE and XLCK.

(b) Main Station Change - Subtract the previous main station count from the current main station count and enter on line B.

(c) Spare Linked Words - Enter on line C the current linked spare words from the current PS-VFY-1A.

(d) Change in Spare Linked Words - Subtract the previous line C from the current line C and record the difference on line D. If the difference is negative, be sure to include the minus (-) sign.

(e) Spare Unlinked Words - Obtain the current unlinked spare words from the current PS-VFY-2A (or XLCK as appropriate) and enter the quantity on Line E.

(f) Change in Spare Unlinked Words - Subtract the previous line E from the current Line E and enter the difference on Line F.

(g) Total Change in Spare Words - Add the current Line D to the current Line F. Enter the result on Line G.

(h) EST MS. Growth (LIMITING EMT) - Enter the estimated MS. growth for the engineering period (ie, limiting EMT from the present Network Design Order or D&F Charts) on Line I.

(i) % MS. growth - To determine the precent of MS. growth, divide Line H by line I and multiply by 100. Enter the result on line J.

(j) Total Word Change Linked - Add the current change in linked spare words (line D) to the previous total linked work change (line K). Enter the result on line K.

(k) Total Unlinked Word Charge - Add the current change in unlinked spare words (line F) to the previous total unlinked word change (line L). Enter the result on line L.

(l) Total Words Used - Take the current line O and subtract line C plus line E. Enter the result on Line M. This is the number of translation words used.

(m) FOC (Fixed Overhead Constants) - FOC equals 102,180 words (for 1AE6 generics). The value on line M(1) will be line M minus the FOC (102,180). This value is the number of words used for variable translations. PG1A Section 12 page 4 describes FOC in detail.

(n) Total Word Change/MS Change - Take the current line G and divide by the current line B and enter the value on line N.

(o) Words Spare - Beginning of Period - This figure is the number of UCS words available in the office. This value on Line O is set card 'CSU' multiplied by 65,536. [NOTE: K Code 17 is included in set card CSU but will be taken into account by line M1 (FOC)]

(p) % Words Used - Divide present line M by present line O and multiply by 100. Enter the value on line P.

(q) Words per EMT - Take the present line M(1) divided by present A multiplied by 100. Enter the value on line P.

(r) Estimated Exhaust - Add line C + E and divide by line Q. This value is the number of EMTS the office could grow if it continues to use words at this rate. Based on EMT growth in this office, calculate an exhaust date.

For purposes of this report, whenever a change in total words installed (line O) occurs, begin a new report period or start period. Basically, this means that lines B, D, F, G, K, L, and N will not have a value in the first month. Begin computing those lines again in the next report month. Exhibit 1 represents the revised PS-VFY-3A.

(Add the following to Paragraph 5.11)

5.11 If the PS-VFY-5 graph is desired the TXA will be required to 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 may be required.

(Add Part 6)

6. SUPPLEMENTAL MEMORY ADMINISTRATION

6.01 A new graph has been added to the memory administration process. This graph is an optional tool. If this graph is desired it will be produced by the TXA. This graph (Exhibit 2) will show a pictorial representation of % MS. capacity vs % Translation Word capacity and can be used to plot the information on a monthly basis. Retention and distribution guidelines are included in Part 7 of this Addendum. If this Form is required it should be made locally by using graph Form S-9943 and adding the necessary information. Once locally produced additional copies can be made as required.

(Add Part 7)

7. RETENTION AND DISTRIBUTION GUIDELINES

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

1) PS-VFY-1A	12 month rolling period
2) PS-VFY-2A	12 month rolling period
3) PS-VFY-3A	Current and previous year
4) PS-VFY-5	Current and previous graph
5) PS-VFY-6	Current and previous year
6) SWB-MA-A	Current and previous chart
7) Abbreviated Statistics	Three years

7.02 The following are distribution guidelines for the PS-VF4 memory administration reports

1) PS-VFY-1A	Distribution to NSA
2) PS-VFY-2A	Distribution to NSA
3) PS-VFY-3A	Distribution to NSA and Network Design
4) PS-VFY-5	Retain by TXA
5) PS-VFY-6	Distribution to NSA and Network Design
6) SWB-MA-A	Retain by TXA
7) Abbreviated Statistics	Distribution to NSA and Network Design

7.03 The Abbreviation Statistics from the TDRRSS process must be retained by the TXA. These statistics should cover a three year period (effectively retain the statistics on three annual reviews). The purpose of this is to be able to track the abbreviation efficiency. A copy of the abbreviation statistics must also be retained by the NSA and Network Design. This information should be kept with the memory administration reports.

EXHIBIT 1

FORM PS-VFY-3A

NO. 1A ESS
WORD USAGE SUMMARY

FORM PS-VFY-3A

TELEPHONE CO. SWBT CONTROL GROUP ESS UNIT

FOR MONTH OF						
DATE ENTERED						
MAIN STATION COUNT	A					
MAIN STATION CHANGE	B					
SPARE LINKED WORDS	C					
CHANGE IN SPARE LINKED WORDS	D					
SPARE UNLINKED WORDS	E					
CHANGE IN SPARE UNLINKED WORDS	F					
TOTAL CHANGE IN SPARE WORDS	G					
EST. MS GROWTH(TOT PERIOD)	I					
% MAIN STATION GROWTH	J					
CUMULATIVE WORD CHANGE LINKED	K					
CUMULATIVE WORD CHANGE UNLINKED	L					
CUMULATIVE TOTAL WORD CHANGE	M					
FOC (-102160)	M(1)					
TOTAL WORD CHANGE/MS CHANGE	N					
TOT WORDS SPARE - START OF PERIOD	O					
TOTAL % WORDS USED TO DATE	P					
TXC WORDS USED PER EMT	Q					
ESTIMATED EXHAUST	R					
TOT. SP. WORDS(LINKED & UNLINKED)	S					

EXHIBIT 2

FORM SWB-MA-A