MANUAL TRANSLATION MODIFICATION PROCEDURE
ALLOCATION OF CALL STORE
NO. 2 AND NO. 2B ELECTRONIC SWITCHING SYSTEMS

CONTENTS PAGE

1. GENERAL

A. Objective

1.01 This procedure is designed to cover all operations necessary to add, delete, or modify the assignment of call store to a translator. The procedure requires a new 10-word master table index (MTI) called SPARECS (Fig. 1). The table is used to locate, use, and release transient-cleared call store blocks. The table provides a bookkeeping capability for up to 200 blocks of call store spare area. Each call store translator can independently have up to 10 subtranslators. Each subtranslator is 40 decimal (50 octal) words long and contains 20 two-word entries. Each entry uses one word to store the block size and one word to store the block address. Call store blocks can be of any size or location as long as the blocks are unused and found in a transient clearing table.

1.02 This section is reissued to include recent changeable procedures provided by the EF-2 generic, and to modify the CSM-1 forms. Revision arrows are used to indicate changes.

1.03 ***The use of a manual translation change procedure is not intended to be a part of the day-to-day routine or course of action. Manual translation changes should be performed only when there is no practical alternative and normal scheduling of an office data administration (ODA) update is not feasible.***

1.04 The ODA update procedures can be performed with greater accuracy due to the inherent error check in the ODA routines. The manual translation modification procedure contains a much greater probability of error due to hand manipulation and recording of the address numbers and memory contents. When performing any manual translation change procedure, the process must be performed error free. ***The parity of the bits on any word that is changed must be even. In the event the parity is not even, when the word is addressed by the ESS program, a system initialization will occur.***

B. Purpose

1.05 This procedure must always be called for by one of the other manual translation modification procedures. It will never be executed by itself. ▶If the office is equipped with an EF-2 (or 2B-EF-2) generic, this procedure can be done by a Recent Change Message. (Refer to Input Message Manual 2H200-04 [for EF-2] or 2H200-05 [for 2B-EF-2].)◀

1.06 The procedure requires a set of translator change forms, CSM-1 and CSM-2 (Fig. 2 and 3, respectively). One form is used for every SPARECS translation table involved in a particular change procedure. The forms are used to map out each SPARECS translation table location and its initial contents. Prior to any manipulation of call store, users are required to follow the initial procedures of the CSM-1 and CSM-2 forms, which requires the use of a No. 2 or 2B Electronic Switching System (ESS) maintenance TTY to read out the current translator contents. After the entries on the forms have been made, the forms will show any changes from the initial contents for each word in each translator involved.

C. Contents of CSM-1 and CSM-2 Forms

CSM-1 FORM

1.07 The CSM-1 form represents the spare call store memory translator table for a No. 2 and 2B ESS central office. The call store memory translator is used to keep a file of blocks of spare or unassigned call store in the translation store memory. This form must be the ***first*** form initiated before any call store memory area can be allocated from, or restored to, spare in the office. In addition, this form should not be reused each time that call store memory is required or restored to spare and updated by the change in program store (CHIPS) procedure, Section 232-127-303.

CSM-2 FORM

1.08 The CSM-2 form represents ***one*** of a possible ten call store subtranslators. The form has been designed to show the address of the initial contents of and sequential changes to every word in the subtranslator between CHIPS updates. This form should be used each time changes on the form are to be transferred into memory and when additional memory allocation, or return to, spare is needed.

1.09 If CSM-1 and CSM-2 forms are not available to record the translator change information, reproducible forms may be obtained from Section 232-127-101, Manual Translation Modification Procedure—General Description.

1.10 The ability to add and subtract in octal is essential to the successful utilization of the procedures in this section. The size and address of each block will be read out of the No. 2 ESS program store in octal in response to a TTY input message. The standard CHIPS procedure required to change the program store cards requires an octal input. All address calculation and indexing is done by octal addition and subtraction. The user must also be able to calculate parity by adding the binary bits that are the contents of the new translator words to be written. Refer to Section 232-127-101, Manual Translation Modification Procedure—General Description, for methods of addition and subtraction in octal, binary-to-octal conversions and tables for decimal-to-octal conversions.

2. PROCEDURES

2.01 The following procedures detail the steps required to allocate changes in call store.

A. Initial Procedure

2.02 The use of CSM-1 and CSM-2 forms is described below.

CSM-1 FORM

(1) From the No. 2 or 2B ESS maintenance TTY, read the initial contents of each of the ten master table index locations listed on the CSM-1 form (Fig. 2).

For No. 2 ESS use input message:

UB PS:RR:aaaaaa bbbbbb c!

where:

UB PS:RR = the command to read the recent changes (if any) from program store

aaaaaa = first address to be read (0-777777)

bbbbbb = second address to be read (0-777777)

c = number of words to be read (1.2) zero or blank is synonymous with 2.

For No. 2B ESS use input message:

DMP:PS aa,LENGTH nn, RC;LX;ONC!

where:

DMP:PS = read contents of main store

aa = the address of the first word to dumped

LENGTH nn = length of block to be dumped in number of words (decimal).

Further explanation of the variable fields may be obtained from the No. 2 ESS Input Message Manual (IM-2H200)

(2) Record the initial contents of the ten master table index words in the ***translator initial contents*** column on the CSM-1 form.

CSM-2 FORM

Note: The translator initial contents column of the CSM-1 form, for the appropriate generic program (example Fig. 2), must have been completed before this procedure for the CSM-2 form is used.

(1) On the CSM-1 form, select from the Translator Initial Contents column, a number (less the parity) other than zero. This number contains the table head address of the subtranslator to be used later in this procedure.

(2) Enter the Subtranslator Table Number (0-9 from the CSM-1 form) of the subtranslator selected for reference at the top of the CSM-2 form.

(3) Write the Table Head Address (less parity) in the top bracketed slot of the Address column.

(4) Enter the remaining 39 addresses (1-47) on the CSM-2 form by adding the octal increments given on the CSM-2 form to the Table Head Address.

(5) Perform a utility read of the Master Table Index.

For No. 2 ESS (LO-1 and EF-1 generic) use input message:

UB PS:RP:aaaaaa bbbbbb c!

Where:

aaaaaa = first address to be read (0-777777)

bbbbbb = second address to be read (0-777777)

c = number of words to be read (1-2 zero or blank is synonymous with 2.

For No. 2B ESS use input message:

DMP:PS aa,LENGTH nn,RC;LX;ONC!

where:

DMP:PS = read contents of main store

aa = the address of the first word to be dumped

LENGTH nn = length of block to be dumped in number of words (decimal).

Using the TTY printout at each Table Address on the CSM-2 form, enter the contents for that address in the Initial Subtranslator Contents column on the CSM-2 form.

B. Memory Allocation From Spare Request

2.03 This procedure tells how to allocate the storage required.

CSM-2 FORM

(1) Attempt to select a block on the CSM-2 form that has enough words to meet the necessary size requirements. The block size is contained in the least significant seven digits of the data recorded in the size slot in the initial subtranslator contents column. It should be noted that the block size of memory is recorded on the CSM-2 form in octal and that the necessary size requirements must be expressed in octal also to be compatible. If ***no*** blocks are large enough to meet the octal size requirements, perform the Initial Procedure, CSM-2 form, for another

subtranslator table. If all assigned subtranslator tables have been tried and no memory block of adequate size can be found, an office data assembler (ODA) run is necessary to construct new blocks.

(2) The address of the first word of memory words selected is the address of the block. This address is the least significant seven digits of the data located in the initial subtranslator contents column for the block number selected. It will be necessary to record this address and use this block when directed by the procedure requesting the Memory Allocation from Spare Request.

(3) Calculate the result of the allocation changes to the size and address of the block selected using the following formula. It will be necessary to convert the number of words, or block size of memory required, to octal. To do this, use the Decimal to Octal Number Conversion Table provided in Section 232-127-101, Appendix 2 as an aid. After making the calculations, enter the size and address into the lowest numbered vacant change slot for that block on the CSM-2 form. Right-justify this number so as to have seven digits contained on the allotted line; ie, to return a block of 15 words to spare, the digits in the change column would appear as 0000015.

Latest Size—Words Requested (in octal) = New Block Size

Latest Block Address + Words Requested (in octal) = New Block Address, if new block size is not equal to zero

or

New Block Address = (0) if new block size is equal to zero

C. Memory Return To Spare Request

2.04 This procedure tells how unused storage may be returned to spare.

(1) Using the information entered on a CSM-2 form, select a block which has the initial or change size and address equal to zero. If no block can be found, execute one of the following steps:

(a) If no zero pointer was found and a CSM-2 form has not been initiated for each nonzero translator initial contents (address), initiate a new CSM-2 form and repeat Step 1 of the Memory Return to Spare Request procedure.

(b) If all of the entries in all of the subtranslators are nonzero and at least one of the ten translator initial contents on the CSM-1 form is zero, execute the procedure to build a new subtranslator table. Refer to Part D, Request to Build a New Memory Subtranslator Table.

(c) If no all zero block pointers can be found on the CSM-2 form, find the entry with the smallest block size and use it as if it were zero, but only if that entry is smaller than the block to be stored. Lost blocks will be recovered by an ODA update.

(2) On the CSM-2 form, write the octal size of the block to be returned to spare into the lowest numbered vacant change column next to the block number chosen. Right-justify this number so as to have seven digits on the allotted line; ie, to return a block of 15 words to spare, the digits in the change column would appear as 0000015.

(3) On the CSM-2 form, write the octal address of the block to be returned to spare into the lowest numbered vacant change column under the size entered by Step 2. Right-justify this number so as to have seven digits on the allotted line; when necessary add zeros until seven digits are obtained.

D. Request to Build a New Memory Subtranslator Table

2.05 This procedure tells how to start a new memory subtranslator table.

(1) Perform the TSM-1, Memory Allocation from Spare Request procedure, using Section

232-127-302, for a block size equal to 40 decimal words and proceed to Step 2 of this procedure.

(2) Select the first MTI address in CSM-1 form with all zero contents. Record the address of the selected block from Step 1 in the change column, located next to the all zero MTI address selected on the CSM-1 form, and also in the top bracketed slot of the Table Head Address column of the CSM-2 form. Right-justify this number so as to have seven digits on the allotted line; when necessary add zeros until seven digits are obtained.

(3) Initiate a new CSM-2 form (Steps 2, 3, 4, and 5 of Part A) using the new MTI address.

(4) The initial subtranslator contents determined in Step 5 of Initial Procedure CSM-2 must be zero.

(5) On the CSM-2 form, write the octal size of the block to be returned to spare into the lowest numbered vacant change column next to the block number chosen. Right-justify this number so as to have seven digits on the allotted line; ie, to return a block of 15 words to spare, the digits in the change column would appear as 0000015.

(6) On the CSM-2 form, write the octal address of the block to be returned to spare into the lowest numbered vacant change column under the size entered by Step 5. Right-justify this number so as to have seven digits on the allotted line; when necessary add zeros until seven digits are obtained.

E. ▶Recent Change

2.06 If the office is a No. 2 ESS (EF-2 generic) or No. 2B ESS (2B-EF-2 generic) this procedure can be done by a recent change message.

At the maintenance TTY—

A RC:CST:ssss/

ADR 0 aaaaaaa/

END!

where:

ssss = block size of call store wanted.

ADR 0 aaaaaaa = beginning address of block of call store to be placed in spare table.◀

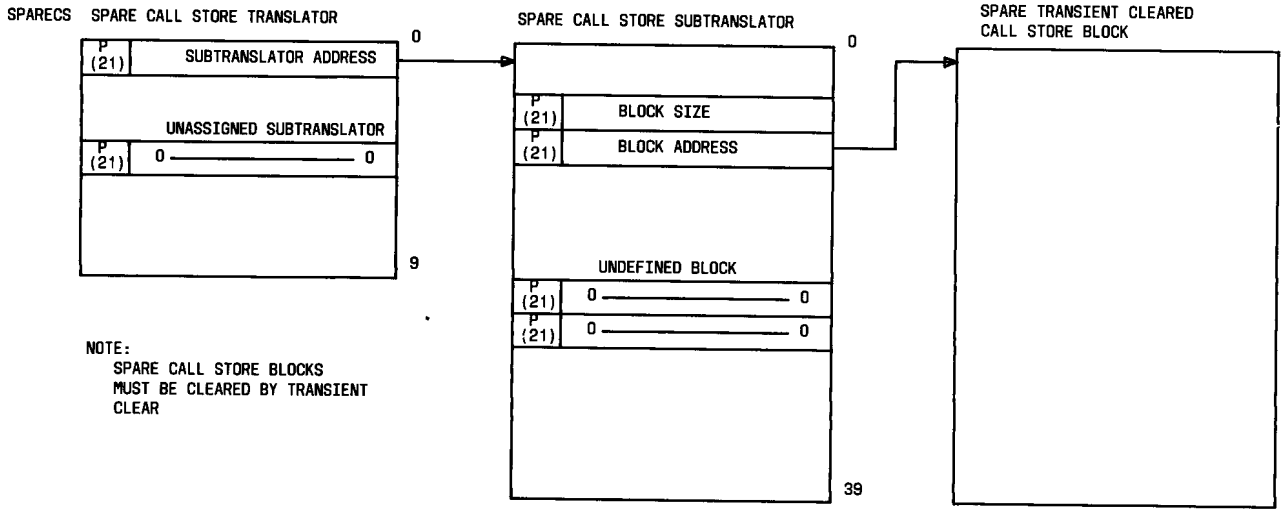

Fig. 1—No. 2 or No. 2B ESS Spare Call Store Translator

NO. 2 OR NO. 2B ESS SPARE TRANSLATION STORE MEMORY
TRANSLATOR CHANGE FORM

CSM-1 FORM

OFFICE Mannsville
DATE 9/11/78

FORM CHIPS ADDRESS RANGE (342023) - (342034)

ESS #	GENERIC	FOR SUBTRANSLATOR TABLE #	STORED AT MTI ADDRESS	TRANSLATOR INITIAL CONTENTS	CHANGES
2	LO-1	0	241236	- - - - - - - -	- - - - - - - -
		1	241237	- - - - - - - -	- - - - - - - -
		2	241240	- - - - - - - -	- - - - - - - -
		3	241241	- - - - - - - -	- - - - - - - -
		4	241242	- - - - - - - -	- - - - - - - -
		5	241243	- - - - - - - -	- - - - - - - -
		6	241244	- - - - - - - -	- - - - - - - -
		7	241245	- - - - - - - -	- - - - - - - -
		8	241246	- - - - - - - -	- - - - - - - -
		9	241247	- - - - - - - -	- - - - - - - -
2	EF-1	0	342023	10123456	- - - - - - - -
		1	342024	10670123	- - - - - - - -
		2	342025	10456701	- - - - - - - -
		3	342026	10234567	- - - - - - - -
		4	342027	10012345	- - - - - - - -
		5	342030	00000000	01543325
		6	342031	- - - - - - - -	- - - - - - - -
		7	342032	- - - - - - - -	- - - - - - - -
		8	342033	- - - - - - - -	- - - - - - - -
		9	342034	- - - - - - - -	- - - - - - - -
2B	EF-1	0	642154	- - - - - - - -	- - - - - - - -
		1	642155	- - - - - - - -	- - - - - - - -
		2	642156	- - - - - - - -	- - - - - - - -
		3	642157	- - - - - - - -	- - - - - - - -
		4	642160	- - - - - - - -	- - - - - - - -
		5	642161	- - - - - - - -	- - - - - - - -
		6	642162	- - - - - - - -	- - - - - - - -
		7	642163	- - - - - - - -	- - - - - - - -
		8	642164	- - - - - - - -	- - - - - - - -
		9	642165	- - - - - - - -	- - - - - - - -

Fig. 2—CSM-1 Form

APPENDIX 3

OFFICE MANNSVILLE — NO. 2 ESS SPARE CALL STORE MEMORY SUBTRANSLTOR CHANGE FORM — CSM-2 FORM

DATE 9/11/78

SUBTRANSLATOR TABLE NUMBER 3 — FORM CHIPS ADDRESS RANGE= (234567)-(234570)

THIS form represents one of a possible ten call store subtranslators. The form has been designed to show the address of the initial contents of and sequential changes to every word in the subtranslator between CHIPS updates. This form should be re-initialized from scratch each time changes on the form are CHIPED into memory and then additional memory allocation or return is needed.

	ADDRESS	INITIAL SUBTRANSLATOR CONTENTS		CHANGE 1	CHANGE 2	CHANGE 3	CHANGE 4	CHANGE 5
TABLE HEAD	(0234567)	SIZE (10000100)	<-BLOCK 0	(0000050)	( )	( )	( )	( )
TABLE HEAD+OCTAL 1=	(0234570)	ADDRESS (00054325)		(0054375)	( )	( )	( )	( )
TABLE HEAD+OCTAL 2=	(0234571)	SIZE (00000030)	<-BLOCK 1	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 3=	(0234572)	ADDRESS (10043210)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 4=	(0234573)	SIZE (10000010)	<-BLOCK 2	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 5=	(0234574)	ADDRESS (00032100)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 6=	(0234575)	SIZE (00000005)	<-BLOCK 3	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 7=	(0234576)	ADDRESS (00021000)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 10=	(0234577)	SIZE (10000007)	<-BLOCK 4	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 11=	(0234600)	ADDRESS (00000014)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 12=	(0234601)	SIZE (10000002)	<-BLOCK 5	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 13=	(0234602)	ADDRESS (10000222)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 14=	(0234603)	SIZE (00000006)	<-BLOCK 6	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 15=	(0234604)	ADDRESS (00072333)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 16=	(0234605)	SIZE (00000003)	<-BLOCK 7	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 17=	(0234606)	ADDRESS (00033431)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 20=	(0234607)	SIZE (00000035)	<-BLOCK 8	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 21=	(0234610)	ADDRESS (00044542)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 22=	(0234611)	SIZE (10000023)	<-BLOCK 9	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 23=	(0234612)	ADDRESS (00000210)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 24=	(0234613)	SIZE (00000014)	<-BLOCK 10	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 25=	(0234614)	ADDRESS (10002214)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 26=	(0234615)	SIZE (00000033)	<-BLOCK 11	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 27=	(0234616)	ADDRESS (10000217)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 30=	(0234617)	SIZE (10000026)	<-BLOCK 12	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 31=	(0234620)	ADDRESS (00000215)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 32=	(0234621)	SIZE (10000031)	<-BLOCK 13	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 33=	(0234622)	ADDRESS (00000125)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 34=	(0234623)	SIZE (00000006)	<-BLOCK 14	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 35=	(0234624)	ADDRESS (00000134)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 36=	(0234625)	SIZE (00000003)	<-BLOCK 15	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 37=	(0234626)	ADDRESS (00000132)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 40=	(0234627)	SIZE (00000024)	<-BLOCK 16	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 41=	(0234630)	ADDRESS (10000133)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 42=	(0234631)	SIZE (10000023)	<-BLOCK 17	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 43=	(0234632)	ADDRESS (10002212)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 44=	(0234633)	SIZE (00000022)	<-BLOCK 18	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 45=	(0234634)	ADDRESS (00000311)		( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 46=	(0234635)	SIZE (10000034)	<-BLOCK 19	( )	( )	( )	( )	( )
TABLE HEAD+OCTAL 47=	(0234636)	ADDRESS (00000333)		( )	( )	( )	( )	( )

Fig. 3—CSM-2 Form