

**MANUAL TRANSLATION MODIFICATION PROCEDURE (LO-1, EF-1, AND EF-2)  
FORMATTING CHANGES IN PROGRAM STORE  
NO. 2 ELECTRONIC SWITCHING SYSTEM**

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**Appendix 1—Form CMG-1**

**1. GENERAL**

**1.01** This section provides the procedures for transferring all changes recorded on the translator change forms onto the "change in program store (CHIPS) message guide" (CMG-1) form (Fig. 1). Therefore, the procedures in this section are used only after the translator forms for making a specific change or changes such as allocating a new trunk group or changing the TOTANI table, etc, have been completed in accordance with the BSP provided for that purpose. The completed

CMG-1 form provides the user with all the CHIPS messages needed to transfer the new translation changes onto the No. 2 Electronic Switching System (ESS) program store cards. After the CMG-1 form has been correctly filled out, the CHIPS procedures provided in Section 232-004-303 must be used to transfer the changes onto the program store cards.

**1.02** This section is reissued to modify Fig. 2. Since this is a general revision, change arrows ordinarily used to indicate changes have been omitted.

**1.03** When a change in translation data is required, the appropriate translator change forms are filled out in accordance with the instructions in the related 232-127-XXX section. The completed translator change forms contain both the current memory contents and the new memory contents to provide a new translation configuration. All translator change forms must be sorted in ascending address order. Then even parity must be calculated for all change data which has bit 21 as the parity bit. If bit 4 is the parity bit, parity was calculated when the translation change forms were completed.

**When to Use the Procedure**

**1.04** 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. A manual translation change procedure should only be used when there is no practical alternative and normal scheduling of ODA update procedures is not feasible. The ODA update procedures can be performed with a greater accuracy due to the inherent error check in the ODA routine. 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.

**NOTICE**

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**1.05** Employing the information on the translator change forms and the procedures in this section, the user will form the TTY input messages for CHIPS and record them on the CMG-1 form. All CHIPS messages must be written in sequence. Each sequence of messages contains the TTY input messages required to change the words on only one program store card. Only one CHIPS sequence can be written for each program store card; otherwise, only the last sequence implemented would become effective in memory.

**1.06** There are 200 octal words on each program store card. The address of the first word on every program store card is an even multiple of 200 octal; ie, "000, 200, 400, 600, 1000, 1200, etc." As messages for a particular CHIPS sequence are written and the address of the next word to be changed is in the next larger even 200 octal range, the current sequence must be terminated. Each CHIPS sequence is initiated by a No. 2 ESS message. This message tells the ESS machine that a CHIPS has started and provides the address of the program store card that will be affected. Every word location on the subtranslator change form which shows a change in the changes column from the adjacent initial subtranslator contents requires a TTY input message. These messages, 1 to 200 octal in number per sequence, form the body of the CHIPS sequence. Each additional message in the sequence provides the address of a change on the program store card, the data presently in memory at that address, and the new data to be written. A CHIPS sequence is terminated by a TTY message that informs the No. 2 ESS that the current CHIPS sequence is over and that magnetization of the program store cards can start.

**1.07** 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 conversion.

## **2. MESSAGE FORMATTING FOR CHIPS**

**2.01** The CHIPS message formatting procedures provide the proper TTY input messages for the changes in each sequence of changes.

**2.02** Assemble all the translator change forms which have been prepared in accordance with the procedures in one or more of the 232-127-XXX BSPs.

**2.03** On each translator change form in the upper right-hand corner is the "form CHIPS address range" (Fig. 2). If the address range is not preprinted in the two slots provided on the form, enter the address of the first word changed in the first slot followed by the address of the last word changed on the form in the second slot.

**2.04** After all forms have a "form CHIPS address range," put the forms in numerical sequence by address range with the lowest numbered octal address on the first form and the highest on the last form.

**2.05** Obtain an unmarked CHIPS change message guide (CMG-1) form (Fig. 1). If blank (CMG-1) forms are not available, a reproducible blank CMG-1 form is provided in Appendix 1 of this section.

**2.06** Address by address scan down the change columns on the various subtranslator change forms as illustrated in Fig. 2 for the first entry in one of the change columns. Record the address of this entry. (See Fig. 3 as an example.)

**2.07** The address found in Step 2.06 is the starting address for your CHIPS sequence. On the CMG-1 form in the first entry position, write the following message using the address obtained in Step 2.06:

M CH:CW:address!

**2.08** Record the address used in Step 2.07 in the second entry position of the CMG-1 form. In the second and all subsequent entry positions, write the following message for every nonblank change slot on the translator change forms until an octal boundary in the address is reached:

M CH:WD:address(initial data)(change data)!

The octal boundary will be a multiple of 200 octal (000, 200, 400, 600, 1000, 1200, etc). The change data to be used should be the most recent or farthest right change data on any forms with multiple change slots.

**2.09** If no address boundary is crossed on the translator change form being used, continue on to the next ordered form until the boundary is found.

**2.10** If more messages cannot be written because a multiple of 200-octal boundary has been reached, terminate the current sequence with the following message on your CMG-1 form:

M CH:EN!

**2.11** Begin the next sequence on a new CMG-1 form by writing the following message using the first address to be changed in the new sequence range:

M CH:CW:address!

**2.12** Record the address used in Step 2.11 in the second entry position of the CMG-1 form. In the second entry position and all subsequent entry positions, write the following message for every nonblank change slot (farthest right change) until the address of the next change would cross a multiple of 200-octal boundary or no more changes are to be made:

M CH:WD:address (initial data) (change data)!

**2.13** To terminate the sequence, on your CMG-1 form write the following message:

M CH:EN!

**2.14** Repeat Steps 2.11, 2.12, and 2.13 until all the changes on the translator change forms have been transferred to the CMG-1 form adjacent to the appropriate complete chips message.

**Note:** Even parity is required on every No. 2 ESS translation data word. This means the sum of the binary bits that make up each data word must be an even number.

**2.15** Convert all octal digits of each most recent word (the farthest right change) to binary digits using the information in Table A.

TABLE A

BINARY-TO-OCTAL CONVERSION

BINARY		OCTAL
001	=	1
010	=	2
011	=	3
100	=	4
101	=	5
110	=	6
111	=	7

BINARY-TO-OCTAL CONVERSION:

BINARY = 101101111001

OCTAL = 1 3 3 7 1

**2.16** Add the binary digits in each most recent word.

**2.17** If the word is a 7-digit octal word and the sum of the binary digits is even, go to the next word until all forms have been processed. If the sum of the binary digits is odd, place a 1 in the eight octal digit position (Fig. 3). Then go to the next word.

**2.18** If the word is an 8-digit octal word, parity has already been calculated but should be checked. If parity is even, no change is required. If parity is odd and the most significant digit is 0, change this digit to 1 and go to the next word. If parity is odd and the most significant bit is 1, an error was made on the original form prior to the transfer of information to the CMG-1 form. Check the information on the original form in accordance with the related procedural 232-127-222 section.

### 3. MANUAL TRANSLATION MODIFICATION PROCEDURES

**3.01** At this point, all the messages and change information required have been entered on the CMG-1 forms. This information can now be used to make manual translation changes to the No. 2 ESS System.

**SECTION 232-127-303**

**3.02** Transfer the information on the CMG-1 forms to the program store cards by following the procedures in Section 232-004-303.

**Note:** Making a paper tape of the CMG-1 input messages prior to starting the manual

translation change procedures is recommended. See IM-2H200 for procedures.



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

TSM-1 FORM

OFFICE Mannville  
 DATE 9/11/78

FORM CHIPS ADDRESS RANGE (~~342035~~) - (~~342042~~)

ESS #	GENERIC	FOR SUBTRANSLATOR TABLE #	STORED AT MTI ADDRESS	TRANSLATOR INITIAL CONTENTS	CHANGES
2	LO-1	0	241224	-----	-----
		1	241225	-----	-----
		2	241226	-----	-----
		3	241227	-----	-----
		4	241230	-----	-----
		5	241231	-----	-----
		6	241232	-----	-----
		7	241233	-----	-----
		8	241234	-----	-----
2	EF-1	0	342035	10214365	-----
		1	342036	10761032	-----
		2	342037	10547601	-----
		3	342040	10325476	-----
		4	342041	10103254	-----
		5	342042	00000000	0513452
		6	342043	-----	-----
		7	342044	-----	-----
		8	342045	-----	-----
2B	EF-1	0	642142	-----	-----
		1	642143	-----	-----
		2	642144	-----	-----
		3	642145	-----	-----
		4	642146	-----	-----
		5	642147	-----	-----
		6	642150	-----	-----
		7	642151	-----	-----
		8	642152	-----	-----
		9	642153	-----	-----

Fig. 2—No. 2/2B ESS Spare Translation Store Memory Translator Change Form (TSM-1 Form)

