

ALLOCATION OF NEW EXPANSION TABLES
MANUAL TRANSLATION MODIFICATION PROCEDURE
EF-2 AND 2B-EF-2
NO. 2/2B ELECTRONIC SWITCHING SYSTEM

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1. GENERAL

1.01 This section provides the procedures for allocating new expansion tables as additional expansion is needed. The tables are made up of one word in the master table index (MTI) pointing to the expansion head table starting address, the expansion head table, and various 2-, 4-, 6-, and 8-word expansion tables. The expansion head table has a fixed size of 512 words. Each entry in the table consists of two of those words (see PA-2H204 for No. 2 ESS or PA-2H205 for No. 2B ESS). The first word in the expansion head table indicates the amount of the head table that has been used. The second word indicates the percentage of expansion blocks dedicated to 4-word, 6-word, and 8-word blocks. Each of the other entries in the table contains the table size and program store address of one expansion table. There can be a maximum of 128 expansion tables. The expansion

head table is indexed by the program store address in each entry which points to the desired expansion table. The expansion table can be 2-, 4-, 6-, or 8-word expansions and can have a maximum length of 256, 512, 768, or 1024 words, respectively.

1.02 This section is reissued to include comments resulting from field evaluation and to upgrade the rating to AT&TCo Standard. Since this is a general revision, change arrows ordinarily used to indicate changes have been omitted.

1.03 The procedures in this section locate an unused table block (pointer) in the expansion head table, explain how the first entry in this table must be modified to reflect the additional expansion table and explain how to make the entry for the expansion table pointer. In addition, instructions for allocating program store area (see Section 232-127-302) and preparing the required change in program store (CHIPS) information are provided. The implementation of all CHIPS changes must be accomplished by use of the procedures in Section 232-127-303 for No. 2 ESS and Section 232-327-303 for No. 2B ESS. See Section 232-127-101 for background information on manual transmission modification.

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 an office data administration (ODA) update procedure is not feasible. The ODA update procedure 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 The ability to add and subtract in octal and add in binary is essential to the successful utilization of the procedures in this section. The expansion head table address and the size of the expansion table will be read out of the No. 2/2B ESS in octal in response to a TTY input message. Modifying the "number of tables" entry in the expansion head table requires an octal calculation. The user must also be able to calculate parity by adding the binary bits that are the contents of the new translation words that are 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. ALLOCATING NEW EXPANSION TABLES

2.01 Consult the MTI in the PA-2H204/PA-2H205 to obtain the expansion head table starting address (EXPTBL). Ensure that the correct MTI is used for the generic program used in the office. Record the octal address given in the MTI in the item 1 slot of the FSX-1 form (example shown in Fig. 1). A reproducible copy of the FSX-1 form is provided in Fig. 2.

2.02 Request a program store read at the address recorded in paragraph 2.01 by typing the following input message on the maintenance TTY:

For No. 2 ESS:

UB PS:RP:aaaaaa 0 1!

a = address to read.

For No. 2B ESS:

DMP:PS aa!

aa = octal address of first word to be dumped.

The output contains the starting address of the expansion head table. Record this number as item 2 on the FSX-1 form.

2.03 Search the functional listing or octal listing of office translations starting at the address recorded in paragraph 2.02 and ending 511 (decimal or 1000 octal) words later for an unused pointer. The unused pointer will consist of four octal words. The first will be 00000077 and the last three will be

00000000. (An alternate method would be to do successive program store reads starting at the address recorded in paragraph 2.02 incremented by four until an unused pointer is found.)

2.04 Record the addresses and contents of the four words in the unused pointer in the appropriate slots (ADDRESS and OLD CONTENTS) on the FSX-1 form.

2.05 Refer to Table C and use the EXPANSION TABLE ENTRIES to obtain the table size indicator. Record the table size indicator as the NEW CONTENTS on line 3.

2.06 Using Table A, convert the new octal data on line 3 of the FSX-1 form to binary digits. Put this information on line 4 of the FSX-1 form.

2.07 Refer to Table C to obtain E of line 4 of the FSX-1 form.

2.08 Refer to Table B to obtain 6W and EXPSIZ of line 4 of the FSX-1 form.

2.09 Item P of line 4 of the FSX-1 form must be calculated. Add all positions on line 4 that contain a 1. If the sum of the 1s is even, place a 0 in position P of line 4 of the FSX-1 form. If the sum of the 1s is odd, place a 1 in position P of line 4 of the FSX-1 form.

2.10 Using Table A, convert line 4 to octal and place as the NEW CONTENTS on line 4A.

2.11 Using the following message and Table C, allocate new block of program store.

At maintenance TTY—

Type in:

A RC:PST ssss 00!

where: ssss = decimal block size of program store wanted.

System Response:

AR RC PST ssss 00

ADR aaaaaaa bbbbbb

END

where: ssss = decimal block size of program store wanted

aaaaaaa = octal start address of spare program store

bbbbbbb = octal stop address of spare program store.

Record aaaaaaa of the TTY output as the NEW CONTENTS on the PS line on the FSX-1 form.

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 = <u>101101111001</u>		
OCTAL = 1 3 3 7 1		

TABLE B
ENTRY SIZE TABLE

EXPSIZ	6W	ENTRY SIZE
001	0	2 WORDS
010	0	4 WORDS
010	1	6 WORDS
011	0	8 WORDS

2.12 Using the following message and Table C, allocate new call store status block with word size of spare call store wanted. Use the CALL STORE CR column (Table C) if the expansion is 8 words. Use this information and the following message to obtain the NEW CONTENTS of CS-1 on the FSX-1 form. The

NEW CONTENTS of CS-1 will be zero if the expansion is 2, 4, or 6 words. Use the CALL STORE CFV column (Table C) if the expansion is 4, 6, or 8 words. Use this information and the following message to obtain the NEW CONTENTS of CS-2 on the FSX-1 form.

At maintenance TTY—

Type in:

A RC:CST:ssss 00!

where: ssss = block size of call store wanted.

System Response:

AR RC CST ssss 00

ADR aaaaaaa bbbbbb

END

where: ssss = block size of call store wanted

aaaaaaa = first address of spare call store

bbbbbbb = last address of spare call store.

Record the returned address aaaaaaa in the appropriate slot on FSX-1 form. Repeat paragraph 2.07 if necessary.

2.13 The NEW CONTENTS of CS-2 on the FSX-1 form will be zero if the expansion is going to be two words.

2.14 Perform a CHIPS using the CHIPS information on the FSX-1 form. Refer to Section 232-127-303 or 232-327-303 for instructions on forming CHIPS messages.

TABLE C
OCTAL SIZE INDICATOR TABLE

EXPANSION HEAD TABLE ENTRIES	WORDS REQUIRED						TABLE SIZE INDICATOR (OCTAL)	E
	EXPANSION TABLE ENTRY SIZE				CALL STORE			
	2-WORD	4-WORD	6-WORD	8-WORD	CR	CFV		
1	2	4	6	8	2	1	177777	1
2	4	8	12	16	2	1	177776	0
3	6	12	18	24	2	1	177775	1
4	8	16	24	32	2	1	177774	0
5	10	20	30	40	4	1	177773	1
6	12	24	36	48	4	1	177772	1
7	14	28	42	56	4	1	177771	1
8	16	32	48	64	4	1	177770	0
9	18	36	54	72	6	1	177767	1
10	20	40	60	80	6	1	177766	1
11	22	44	66	88	6	1	177765	1
12	24	48	72	96	6	1	177764	1
13	26	52	78	104	8	1	177763	1
14	28	56	84	112	8	1	177762	1
15	30	60	90	120	8	1	177761	1
16	32	64	96	128	8	1	177760	0
17	34	68	102	136	10	2	177757	1
18	36	72	108	144	10	2	177756	1
19	38	76	114	152	10	2	177755	1
20	40	80	120	160	10	2	177754	1
21	42	84	126	168	12	2	177753	1
22	44	88	132	176	12	2	177752	1
23	46	92	138	184	12	2	177751	1
24	48	96	144	192	12	2	177750	1
25	50	100	150	200	14	2	177747	1
26	52	104	156	208	14	2	177746	1
27	54	108	162	216	14	2	177745	1
28	56	112	168	224	14	2	177744	1
29	58	116	174	232	16	2	177743	1
30	60	120	180	240	16	2	177742	1
31	62	124	186	248	16	2	177741	1
32	64	128	192	256	16	2	177740	0
33	66	132	198	264	18	3	177737	1
34	68	136	204	272	18	3	177736	1
35	70	140	210	280	18	3	177735	1
36	72	144	216	288	18	3	177734	1
37	74	148	222	296	20	3	177733	1
38	76	152	228	304	20	3	177732	1
39	78	156	234	312	20	3	177731	1
40	80	160	240	320	20	3	177730	1
41	82	164	246	328	22	3	177727	1
42	84	168	252	336	22	3	177726	1
43	86	172	258	344	22	3	177725	1
44	88	176	264	352	22	3	177724	1

TABLE C (Contd)
OCTAL SIZE INDICATOR TABLE

EXPANSION HEAD TABLE ENTRIES	WORDS REQUIRED						TABLE SIZE INDICATOR (OCTAL)	E
	EXPANSION TABLE ENTRY SIZE				CALL STORE			
	2-WORD	4-WORD	6-WORD	8-WORD	CR	CFV		
45	90	180	270	360	24	3	177723	1
46	92	184	276	368	24	3	177722	1
47	94	188	282	376	24	3	177721	1
48	96	192	288	384	24	3	177720	1
49	98	196	294	392	26	4	177717	1
50	100	200	300	400	26	4	177716	1
51	102	204	306	408	26	4	177715	1
52	104	208	312	416	26	4	177714	1
53	106	212	318	424	28	4	177713	1
54	108	216	324	432	28	4	177712	1
55	110	220	330	440	28	4	177711	1
56	112	224	336	448	28	4	177710	1
57	114	228	342	456	30	4	177707	1
58	116	232	348	464	30	4	177706	1
59	118	236	354	472	30	4	177705	1
60	120	240	360	480	30	4	177704	1
61	122	244	366	488	32	4	177703	1
62	124	248	372	496	32	4	177702	1
63	126	252	378	504	32	4	177701	1
64	128	256	384	512	32	4	177700	0
65	130	260	390	520	34	5	177677	1
66	132	264	396	528	34	5	177676	1
67	134	268	402	536	34	5	177675	1
68	136	272	408	544	34	5	177674	1
69	138	276	414	552	36	5	177673	1
70	140	280	420	560	36	5	177672	1
71	142	284	426	568	36	5	177671	1
72	144	288	432	576	36	5	177670	1
73	146	292	438	584	38	5	177667	1
74	148	296	444	592	38	5	177666	1
75	150	300	450	600	38	5	177665	1
76	152	304	456	608	38	5	177664	1
77	154	308	462	616	40	5	177663	1
78	156	312	468	624	40	5	177662	1
79	158	316	474	632	40	5	177661	1
80	160	320	480	640	40	5	177660	1
81	162	324	486	648	42	6	177657	1
82	164	328	492	656	42	6	177656	1
83	166	332	498	664	42	6	177655	1
84	168	336	504	672	42	6	177654	1
85	170	340	510	680	44	6	177653	1
86	172	344	516	688	44	6	177652	1
87	174	348	522	696	44	6	177651	1
88	176	352	528	704	44	6	177650	1

TABLE C (Contd)
OCTAL SIZE INDICATOR TABLE

EXPANSION HEAD TABLE ENTRIES	WORDS REQUIRED						TABLE SIZE INDICATOR (OCTAL)	E
	EXPANSION TABLE ENTRY SIZE				CALL STORE			
	2-WORD	4-WORD	6-WORD	8-WORD	CR	CFV		
89	178	356	534	712	46	6	177647	1
90	180	360	540	720	46	6	177646	1
91	182	364	546	728	46	6	177645	1
92	184	368	552	736	46	6	177644	1
93	186	372	558	744	48	6	177643	1
94	188	376	564	752	48	6	177642	1
95	190	380	570	760	48	6	177641	1
96	192	384	576	768	48	6	177640	1
97	194	388	582	776	50	7	177637	1
98	196	392	588	784	50	7	177636	1
99	198	396	594	792	50	7	177635	1
100	200	400	600	800	50	7	177634	1
101	202	404	606	808	52	7	177633	1
102	204	408	612	816	52	7	177632	1
103	206	412	618	824	52	7	177631	1
104	208	416	624	832	52	7	177630	1
105	210	420	630	840	54	7	177627	1
106	212	424	636	848	54	7	177626	1
107	214	428	642	856	54	7	177625	1
108	216	432	648	864	54	7	177624	1
109	218	436	654	872	56	7	177623	1
110	220	440	660	880	56	7	177622	1
111	222	444	666	888	56	7	177621	1
112	224	448	672	896	56	7	177620	1
113	226	452	678	904	58	8	177617	1
114	228	456	684	912	58	8	177616	1
115	230	460	690	920	58	8	177615	1
116	232	464	696	928	58	8	177614	1
117	234	468	702	936	60	8	177613	1
118	236	472	708	944	60	8	177612	1
119	238	476	714	952	60	8	177611	1
120	240	480	720	960	60	8	177610	1
121	242	484	726	968	62	8	177607	1
122	244	488	732	976	62	8	177606	1
123	246	492	738	984	62	8	177605	1
124	248	496	744	992	62	8	177604	1
125	250	500	750	1000	64	8	177603	1
126	252	504	756	1008	64	8	177602	1
127	254	508	762	1016	64	8	177601	1
128	256	512	768	1024	64	8	177600	0

FSX-1

1. OCTAL ADDRESS OF EXPTBL = 0 7 4 0 0 5 0
2. CONTENTS OF EXPTBL = 0 1 2 0 4 0 0 1
3. NEW CONTENTS = 1 7 7 7 7 6
4. TABLE SIZE INDICATOR

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 | 0 | 0 | 0 | 0 0 1
 | E | P | 6 | EXPSIZ
 | W |

CHIPS INFORMATION

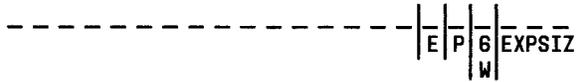
	ADDRESS	OLD CONTENTS	NEW CONTENTS
4A	<u>1</u> <u>2</u> <u>0</u> <u>4</u> <u>7</u> <u>5</u> <u>2</u>	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>7</u> <u>7</u>	<u>1</u> <u>7</u> <u>7</u> <u>7</u> <u>7</u> <u>6</u> <u>0</u> <u>1</u>
PS	<u>1</u> <u>2</u> <u>0</u> <u>4</u> <u>7</u> <u>5</u> <u>3</u>	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>	<u>0</u> <u>1</u> <u>2</u> <u>0</u> <u>4</u> <u>0</u> <u>0</u> <u>0</u>
CS-1	<u>1</u> <u>2</u> <u>0</u> <u>4</u> <u>7</u> <u>5</u> <u>4</u>	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>
CS-2	<u>1</u> <u>2</u> <u>0</u> <u>4</u> <u>7</u> <u>5</u> <u>5</u>	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>

Fig. 1—Completed FSX-1 Form

SECTION 232-127-308

FSX-1

1. OCTAL ADDRESS OF EXPTBL = _ _ _ _ _
2. CONTENTS OF EXPTBL = _ _ _ _ _
3. NEW CONTENTS = _ _ _ _ _
4. TABLE SIZE INDICATOR



CHIPS INFORMATION

	ADDRESS	OLD CONTENTS	NEW CONTENTS
4A	_ _ _ _ _	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>7</u> <u>7</u>	_ _ _ _ _
PS	_ _ _ _ _	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>	_ _ _ _ _
CS-1	_ _ _ _ _	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>	_ _ _ _ _
CS-2	_ _ _ _ _	<u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u> <u>0</u>	_ _ _ _ _

Fig. 2—Reproducible FSX-1 Form