TEST C8001
1407 CONSOLE UNIT TEST

PURPOSE

The purpose of this diagnostic is to check out the operation of the 1407 Console Inquiry Unit.

DESCRIPTION

Both a READ and a WRITE in the LOAD and MOVE mode of operation is accomplished under program control. For the ALTER mode of operation, the C. E. is to do this manually. A 4K storage 1401 is necessary to test the 1407 with this diagnostic. For 1401 systems with 1.4 or 2K storages, use Test C8002.

SENSE SWITCH SET-UPS

The sense switches are used as follows:

SWITCH	FUNCTION	NORMAL SETTING
Sense Switch A	Last Card	On
Sense Switch B	For a Continuous Loop of Writing Lines 1 and 2, 3, 4, 5 in the MOVE mode of operation	Off
Sense Switch C	For a Continuous Loop Writing Lines 1 and 2, 3, 4, 5 in the LOAD mode of operation	Off
Sense Switch D	Controls the Continuous Loop Operation of the Complete Program	Off
Sense Switch E	Controls the BRANCH Back to the Same Instruction or, to the Next Instruction From an Error Routine, if off.	Off
Sense Switch F	Controls the Bypassing of An Error Print-Out.	Off
Sense Switch G	Controls the Reading In of Data From the 1407 to the 1401.	Off

Column Control Postions #9 (3656 = F56) - 9 for Bypassing The Compare Instructions of the Data Read Into the 1401 from the 1407.

Column Control Position (3657 = F57) for Looping on Carriage Return Test.

OPERATION

The diagnostic deck is placed into the 1402 hopper with three blank cards following it. The 1401 is reset with the START RESET button, and the LOAD button on the 1402 is pressed. This will cause the program to load automatically. After the program has loaded, a type-out will occur on the 1407 indicating the test number, the size of 1401 storage required, and a set of instructions for operating the test. Reference is made in this type-out to the C. E. write-up for details, therefore, this portion of the write-up should be studied carefully. There is also a flow chart entitled, "1407 Inquiry Test C8001 General" written for this diagnostic test.

The following is the sequence of operation. After the Housekeeping instructions and the instructive type-out occur, the program will advance automatically to the main portion of the program. Here the 1407 will type a line of information. Then, it will begin automatically WRITING lines 1 and 2 in the MOVE mode of operation. After WRITING lines 1 and 2, line number 3 will be written, then line number 4, followed by line number 5 - all in the MOVE mode of operation. A test is then made of Sense Switch B. If Sense Switch B is ON the 1407 will WRITE the Sense Switch B Comment and then BRANCH and WRITE lines 1 and 2, 3, 4, and 5 in the MOVE mode of operation. As long as Sense Switch B is ON, this sequence of instructions will be executed. If Sense Switch B is OFF, the program will then begin WRITING lines 1 and 2, then line 3 and line 4, and line 5 in the LOAD mode of operation. Then, If Sense Switch C Is ON, the 1407 will write the Sense Switch C Comment and BRANCH to WRITE lines 1 and 2, 3, 4 and 5 in the LOAD mode of operation again. As long as Sense Switch C is ON, this sequence of instructions will be executed. If C is OFF a test is then made of Sense Switch G. (Note: Sense Switch G must be OFF for the first pass through this diagnostic.) Sense Switch G controls the reading of data from the 1407 to the 1401 core storage unit. If Sense Switch G is OFF, the program will BRANCH to test the Inquiry Latch. If the Inquiry Latch is OFF, the machine will WRITE "PRESS THE REQUEST/ENTER KEY .... NOW PRESS THE START KEY" - if the REQUEST/ENTER Key is not pressed and the START button is pressed, the above line will be repeated. This will continue until the REQUEST/ENTER key is pressed. Then, when the START key is pressed, the machine will WRITE the following line of instruction. "READ LINE 1 MOVE PRESS RESPOND KEY AFTER LINE 1 TO PUT GMWM AT THE END OF REC." The C. E. is then to Read In line number 1 as recorded above in the MOVE mode of operation into the 1401 from the 1407 keyboard. It should be noted that the number sequence is first followed by the alphabetical sequence (with a / between R and S) followed by special characters in the upper case and special characters in the lower case and the indicative comment LINE 1. This grouping is designed to aid the C. E. in trouble-shooting the missing of zones or the missing of numbers in any transfer of data from the 1401 to the 1407 or vice-versa. After writing the indicative comment "Line1. Blank" the RESPOND key MUST be depressed. This places the GMWM in the 1401 storage. These lines of information are designed to be printed in 80 column positions. It is therefore suggested that the C. E. set the limits

on the typewriter for 80 spaces only. After writing the 80 characters in the MOVE mode of operation above, the Request Latch is again tested and the line of information, "PRESS THE REQUEST/ENTER KEY....NOW PRESS THE START KEY" is written. When the REQUEST/ENTER key is pressed and the START key is depressed, the following line of instructions will be printed, "READ LINE 1 LOAD PRESS RESPOND KEY AFTER LINE 1 TO PUT GMWM AT THE END OF REC." The program then will wait for the C. E. to READ into the 1401 core storage line 1 in the LOAD mode. (Note: Place the Word Marks in the proper position. The C. E. will have to refer to the line 1 WRITTEN in the LOAD mode.

After these lines of data have been WRITTEN into the 1401 core storage and the Respond Key pressed, the program compares the data READ into the 1401 to the data contained in the diagnostic program. If the comparison is not equal, the 1407 will type out the data lines from the diagnostic program and then the error lines. The MOVE mode information will be compared first and, if in error, will be typed first. The LOAD mode of information will be compared last and, if in error, will be typed last. Next is the Carriage Return Test. This is accomplished by placing WORD MARKS in column positions 80, 70, 60, 50, 40, 30, 20, 10, 4, 3, 2 and 1, and will print in the MOVE Mode a line for each SET WORD MARK instruction. Then the WORD MARKS are cleared and it will print in the LOAD Mode a line for each CLEAR WORD MARK instruction. A BRANCH if storage location 3657 is equal to (d) modifier (a GM) will cause the test to be repeated until the GM is removed. After this, Sense Switch D is interrogated. If Sense Switch D is ON the comment is WRITTEN concerning Sense Switch D and the program branches to the beginning of the program to write lines 1 and 2 again in the MOVE mode of operation. If Sense Switch D is OFF, the program will WRITE an instructive message concerning the ALTER mode of operation and will WRITE an instructive message concerning the END OF TEST. The information concerning the END OF TEST is as follows: "IF NO DETAIL, END OF TEST. PRESS START TO BR TO CHAIN."

If in place of the three blank cards mentioned at the beginning of this write-up a deck of cards is placed behind the Main Program, a ripple test can be run. This deck of cards must have in column 80, the letter L. This is to cause the program to READ IN another card from the 1402 and print its information on the 1407. There are two main types of cards. One is a key ripple. This will ripple one key after another from the 1407 character basket. The second type of card contained in the deck is designed to ripple every character, normal and special, and every number past every position on the 1407 typewriter except those positions that record the test number and the type of card. The last card MUST either be blank or have "END CD" written in columns 76 through 80.

It will also be noted that if Sense Switch G is turned ON after the initial reading operation, that it will type out the Sense Switch G information and then BRANCH around the READ-IN portion of the program. Then the comparison instructions, to check the data READ from the 1407 to the 1401, are executed. This comparison is why Sense Switch G must be turned OFF for the first pass through the diagnostic. If it is desired to bypass the comparison operation between the data written and the data in the 1407 diagnostic, a 9 must be

placed in storage position 3656 or it can be accomplished by placing a 9 in column 34 of the next to the last card in the Main Program. This card is The Column Control Card and has the numbers 99998 in columns 1-5. This card can also control the loop operation of any one of the test lines within the diagnostic. This is accomplished by setting the number in the control card corresponding to the number test referred to under the line of information that it is desired to loop.

The data field in the column control card begins in columns 24 and ends in column 35. Column 24 is a blank, column 25 is a 0, 26 is a 1, etc. until column 34 which is a 9 and column 35 is for a GM (12-7,8 punch). This card is sent to the field blank, however, the C. E. can place the appropriate number in this card or place the appropriate number in the proper storage location to accomplish this operation.

ERROR

For this diagnostic, turn the PROCESS CHECK SWITCH OFF. Upon an error the diagnostic will type out the procedure to be followed. If Sense Switch E is ON the program will BRANCH back to the same instruction in which the error occurred. If Sense Switch E is OFF the program will BRANCH to the instructions which cause the next line of data to be typed.

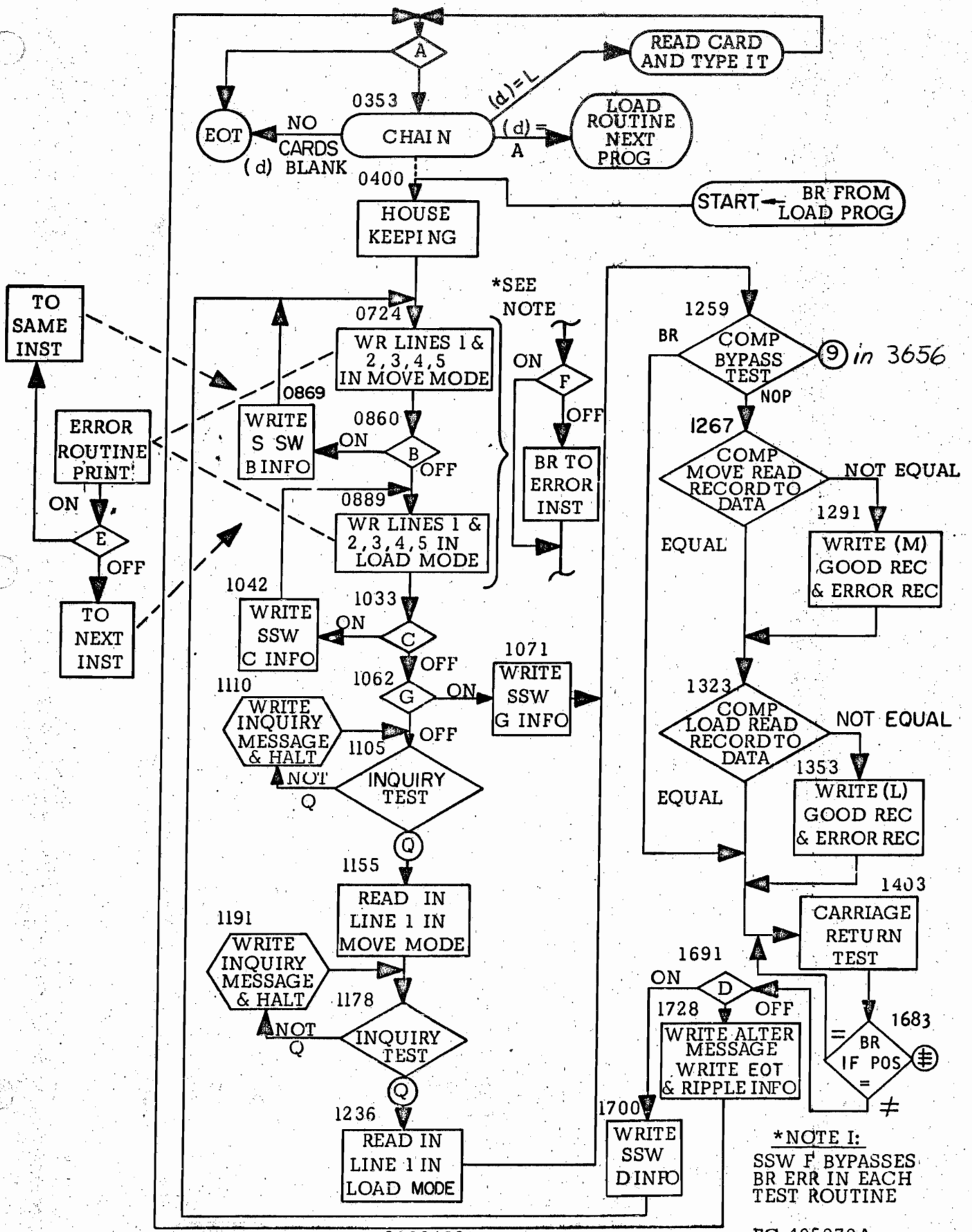
SPECIAL NOTES

It will be noted that when the machine is programmed to space, that it is, actually programmed to print a blank and then space, this is designed to test the timing circuits that are involved in a carriage return in printing a single character.

The Ripple decks are not intended to be run each time the test is run because of the time involved.

The READING-IN of every character from the keyboard Left to Right and Top to Bottom in Lower Case and Upper Case can be done in place of Line 1 and Line 2. This will test the compare circuits and should cause a type-out of this read in data and the diagnostic data. This should be done in both the MOVE and LOAD modes. Test the WM with and without a "C" bit.

1407 INQUIRY TEST C8001 (GENERAL)



EC 405070A

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CLEAR STORAGE 1     ,008015,022026,030034,041,045,053,0570731026
CLEAR STORAGE 2     L072116,110106,105117B101/199,027A074028=0278001027708026/0991,001/00111710
BOOTSTRAP CARD      ,008015,022029,056063/056029                              ,0240671056
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PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION			COMMENTS
	010			CTL	33							C8001
	020			ORG	0333							
	030				* CHAIN ROUTINE		A	BR LAST CARD				
	035	7		LCA	T83200	0091		0333	L	L39	081	LOAD GM-WM
	040	8		MCW	&TO	0001	W	0340	M	&TO	001 W	PRNT FROM RDER.
	050	1		R				0348	I			FEED A CARD
	060	4		SW	0001			0349	.	001		SET A WORD MARK
	070	8		B	0001	0080	A	0353	B	001	080 A	BR TO LOAD ROUT
	080	8		B	0333	0080	L	0361	B	333	080 L	BR TO MAIN PROG
	090	4	H00090	H	0400			0369	.	400		EOJ HALT
	110			ORG	0400							
5	000				* HOUSE KEEPING TEST C8001							
5	001				* 1407 CONSOLE UNIT TEST							
5	010	7		MN	3995	C93010& 13		0400	D	I95	Q80	RM TO CENT SIGN
5	020	7			3995	C93110- 24		0407	D	I95	&04	RM TO CENT SIGN
5	030	7		MN	3995	C93150- 26		0414	D	I95	&83	RM TO CENT SIGN
5	040	7		MN	3995	T83010& 13		0421	D	I95	K22	RM TO CENT SIGN
5	080	7		SW	C95050	C93040& 9		0428	.	D77	R56	SET WORD MARKS
5	110	7		SW	I40010- 31	C93010- 20		0435	.	X56	Q47	SET WORD MARKS
5	120	7		SW	C93010- 11	C93010- 2		0442	.	Q56	Q65	SET WORD MARKS
5	130	7		SW	C93010& 9	C93010& 18		0449	.	Q76	Q85	SET WORD MARKS
5	150	7		SW	C93040& 5	C93040- 25		0456	.	R52	R22	SET WORD MARKS
5	160	7		SW	C93040- 19	C93040- 13		0463	.	R28	R34	SET WORD MARKS
5	170	7		SW	C93040- 7	C93040- 3		0470	.	R40	R44	SET WORD MARKS
6	010	7		SW	C93110& 3	C93110- 29		0477	.	&31	R99	SET WORD MARKS
6	020	7		SW	C93110- 27	C93110- 25		0484	.	&01	&03	SET WORD MARKS
6	030	7		SW	C93110- 23	C93110- 21		0491	.	&05	&07	SET WORD MARKS
6	040	7		SW	C93110- 17	C93110- 19		0498	.	&11	&09	SET WORD MARKS
6	050	7		SW	C93110- 15	C93110- 13		0505	.	&13	&15	SET WORD MARKS
6	060	7		SW	C93110- 11	C93110- 9		0512	.	&17	&19	SET WORD MARKS
6	070	7		SW	C93110- 7	C93110- 5		0519	.	&21	&23	SET WORD MARKS
6	080	7		SW	C93110- 3	C93110- 1		0526	.	&25	&27	SET WORD MARKS
6	100	7		SW	C93110& 5	C93110& 7		0533	.	&33	&35	SET WORD MARKS
6	110	7		SW	C93110& 9	C93110& 11		0540	.	&37	&39	SET WORD MARKS

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PG LIN  CT  LABEL    OP    A OPERAND        B OPERAND        D    LOC   INSTRUCTION COMMENTS   C8001
 6 120   7          SW    C93110& 13       C93110& 15            0547  . &41 &43    SET WORD MARKS
 6 130   7          SW    C93110& 17       C93110& 19            0554  . &45 &47    SET WORD MARKS
 6 140   7          SW    C93110& 21       C93110& 23            0561  . &49 &51    SET WORD MARKS
 6 150   7          SW    C93110& 25       C93110& 27            0568  . &53 &55    SET WORD MARKS
 6 160   7          SW    C93110& 29       C93110& 31            0575  . &57 &59    SET WORD MARKS
 6 170   7          SW    C93150- 22       C93130- 13            0582  . &87 &63    SET WORD MARKS
 6 180   7          SW    C93130- 11       C93130-  9            0589  . &65 &67    SET WORD MARKS
 7 030   7          SW    C93150- 12       C93180- 29            0596  . &97 A61    SET WORD MARKS
 7 040   7          SW    C93180- 27       C93180- 25            0603  . A63 A65    SET WORD MARKS
 7 050   7          SW    C93180- 23       C93010& 26            0610  . A67 Q93    SET WORD MARKS
 8 010   7          LCA   T83200           C99998&  2            0617  L L39 F58    MOVE GM-WM
 8 020   8          MCW   %TO              C91010- 31       W    0624  M %TO L42 W  WR H.K. MESSAGE
 8 030   8          MCW   %TO              C90110-  1       W    0632  M %TO L39 W  SPACE
 8 040   8          MCW   %TO              C90110-  1       W    0640  M %TO L39 W  SPACE
 8 050   8          B     H08070           C99998-  9       0    0648  B 660 F47 0  BR TO HALT & BR
 8 060   4          B     P10010                                0656  B 700        BR TO MAIN PROG
 8 070   4 H08070   H     P10010                                0660  . 700        H. K. HALT & BR
 8 100              ORG   0700
10 000                    * MAIN PROG MCW TEST
10 001                    * 1407 CONSOLE TYPE-WRITER UNIT -- TEST C8001
10 010   8 P10010  MCW   %TO              C92110- 31       W    0700  M %TO N93 W  WRITE INFO DATA
10 030   8          MCW   %TO              C90110           W    0708  M %TO L40 W  SPACE
10 035   8          MCW   %TO              C90110           W    0716  M %TO L40 W  SPACE
10 040   8 P10040  MCW   %TO              T83010- 31       W    0724  M %TO J78 W  WR LINES 1 & 2
10 050   5          B     P10070                           F    0732  B 742 F      SSW # F TEST
10 060   5          B     E50010                           %    0737  B Z18 %      BR ON ERROR
10 070   8 P10070  B     P10040           C99998-  8       1    0742  B 724 F48 1  SW # 1 TEST
10 080   8          MCW   %TO              C90110           W    0750  M %TO L40 W  SPACE
10 110   8 P10110  MCW   %TO              C93110- 31       W    0758  M %TO R97 W  WRITE LINE 3
10 120   5          B     P10140                           F    0766  B 776 F      SSW # F TEST
10 130   5          B     E50110                           %    0771  B Z44 %      BR ON ERROR
10 140   8 P10140  B     P10110           C99998-  7       2    0776  B 758 F49 2  SW # 2 TEST
10 150   8          MCW   %TO              C90110           W    0784  M %TO L40 W  SPACE
11 010   8 P11010  MCW   %TO              C93150- 31       W    0792  M %TO &78 W  WRITE LINE 4
11 020   5          B     P11040                           F    0800  B 810 F      SSW # F TEST
11 030   5          B     E50210                           %    0805  B %70 %      BR ON ERROR
11 040   8 P11040  B     P11010           C99998-  6       3    0810  B 792 F50 3  SW # 3 TEST
11 050   8          MCW   %TO              C90110           W    0818  M %TO L40 W  SPACE
11 110   8 P11110  MCW   %TO              C93180- 31       W    0826  M %TO A59 W  WRITE LINE 5
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PROGRAM

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS C8001
11	120	5		B	P11140		F	0834	B 844 F	SSW # F TEST
11	130	5		B	E50310		%	0839	B 296 %	BR ON ERROR
11	140	8	P11140	B	P11110	C99998- 5	4	0844	B 826 F51 4	SW # 4 TEST
11	150	8		MCW	%TO	C90110	W	0852	M %TO L40 W	SPACE
11	160	5		B	P11180		B	0860	B 869 B	BR LOOP SSW # B
11	170	4		B	P12010			0865	B 889	BR SSW # B OFF
11	180	8	P11180	MCW	%TO	C96010- 13	W	0869	M %TO D79 W	WR SSW COMMENT
11	190	8		MCW	%TO	C90110	W	0877	M %TO L40 W	SPACE
11	200	4		B	P10040			0885	B 724	BR LOOP
12	000				* MAIN PROG LCA TEST					
12	010	8	P12010	LCA	%TO	C93010- 31	W	0889	L %TO 036 W	WR LINES 1 & 2
12	020	5		B	P12040		F	0897	B 907 F	SSW # F TEST
12	030	5		B	E50410		%	0902	B -22 %	BR ON ERROR
12	040	8	P12040	B	P12010	C99998- 4	5	0907	B 889 F52 5	SW # 5 TEST
12	050	8		LCA	%TO	C90110	W	0915	L %TO L40 W	SPACE
12	110	8	P12110	LCA	%TO	C93110- 31	W	0923	L %TO R97 W	WRITE LINE 3
12	120	5		B	P12140		F	0931	B 941 F	SSW # F TEST
12	130	5		B	E50510		%	0936	B -48 %	BR ON ERROR
12	140	8	P12140	B	P12110	C99998- 3	6	0941	B 923 F53 6	SW # 6 TEST
12	150	8		LCA	%TO	C90110	W	0949	L %TO L40 W	SPACE
13	010	8	P13010	LCA	%TO	C93150- 31	W	0957	L %TO &78 W	WRITE LINE 4
13	020	5		B	P13040		F	0965	B 975 F	SSW # F TEST
13	030	5		B	E50610		%	0970	B -74 %	BR ON ERROR
13	040	8	P13040	B	P13010	C99998- 2	7	0975	B 957 F54 7	SW # 7 TEST
13	050	8		LCA	%TO	C90110	W	0983	L %TO L40 W	SPACE
13	110	8	P13110	LCA	%TO	C93180- 31	W	0991	L %TO A59 W	WRITE LINE 5
13	120	5		B	P13140		F	0999	B +09 F	SSW # F TEST
13	130	5		B	E50710		%	1004	B J00 %	BR ON ERROR
13	140	8	P13140	B	P13110	C99998- 1	8	1009	B 991 F55 8	SW # 8 TEST
13	150	8		LCA	%TO	C90110	W	1017	L %TO L40 W	SPACE
13	155	8		LCA	%TO	C90110	W	1025	L %TO L40 W	SPACE
13	160	5		B	P13162		C	1033	B +42 C	BR LOOP SSW # C
13	161	4		B	P13170			1038	B +62	BR SSW # C OFF
13	162	8	P13162	MCW	%TO	C96030- 13	W	1042	M %TO D94 W	WR SSW COMMENT
13	163	8		MCW	%TO	C90110	W	1050	M %TO L40 W	SPACE
13	164	4		B	P12010			1058	B 889	BR LOOP
13	170	5	P13170	B	P13172		G	1062	B +71 G	SSW # G TEST
13	171	4		B	P14010			1067	B +91	BR SSW # G OFF
13	172	8	P13172	MCW	%TO	C96070- 23	W	1071	M %TO E24 W	WR SSW COMMENT

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D
13	173	8		MCW	%TO	C90110	W
13	174	4		B	P14370		
14	000			* MAIN PROG READ MCW & LCA			
14	010	7	P14010	LCA	T83200	T83040- 31	
14	020	7		LCA	T83200	C93040- 31	
14	030	5	P14030	B	P14080		Q
14	040	8		MCW	%TO	C92070- 31	W
14	050	1		H			
14	060	4		B	P14030		
14	080	8	P14080	MCW	%TO	C90110	W
14	090	8	P14080	MCW	%TO	C92150- 31	W
14	095	8		MCW	%TO	C90110	W
14	100	8		MCW	%TO	C90110	W
14	110	8	P14110	MCW	%TO	I40010- 31	R
14	115	5		B	P14030		*
14	120	5		B	P14230		F
14	130	5		B	E50810		%
14	230	5	P14230	B	P14280		Q
14	235	8		MCW	%TO	C90110	W
14	240	8		MCW	%TO	C92070- 31	W
14	250	1		H			
14	260	4		B	P14230		
14	280	8	P14280	MCW	%TO	C90110	W
14	290	8	P14280	MCW	%TO	C92350- 31	W
14	295	8		MCW	%TO	C90110	W
14	300	8		MCW	%TO	C90110	W
14	310	8	P14310	LCA	%TO	I45010- 31	R
14	315	5		B	P14230		*
14	320	5		B	P14370		F
14	330	5		B	E50910		%
14	370	8	P14370	B	P16060	C99998	9
15	000			* READ COMPARE ROUTINE			
15	010	7	P15010	C	T83030	I40030	
15	020	5		B	P15034		/
15	030	4		B	P16010		
15	034	8	P15034	MCW	%TO	C90110	W
15	035	8		MCW	%TO	C98010- 15	W
15	040	8	P15040	MCW	%TO	T83010- 31	W
15	050	8		MCW	%TO	I40010- 31	W

LOC		INSTRUCTION			COMMENTS
1079	M	%TO	L40	W	SPACE
1087	B	S59			BR BYPASS
1091	L	L39	K58		SET IN GMWM
1098	L	L39	R16		SET IN GMWM
1105	B	/23	Q		BR INQ/REQ
1110	M	%TO	N35	W	WRITE Q INST
1118	*				HALT FOR KEYS
1119	B	/05			BR TO TRY AGAIN
1123	M	%TO	L40	W	SPACE
1131	M	%TO	O74	W	WR INFO DATA
1139	M	%TO	L40	W	SPACE
1147	M	%TO	L40	W	SPACE
1155	M	%TO	X56	R	RD MCW LINE 1.
1163	B	/05	*		BR INQUIRY IND.
1168	B	/78	F		SSW # F TEST
1173	B	J26	%		BR ON ERROR
1178	B	S04	Q		BR INQ/REQ
1183	M	%TO	L40	W	SPACE
1191	M	%TO	N35	W	WRITE Q INST
1199	*				HALT FOR KEYS
1200	B	/78			BR TO TRY AGAIN
1204	M	%TO	L40	W	SPACE
1212	M	%TO	P55	W	WR INFO DATA
1220	M	%TO	L40	W	SPACE
1228	M	%TO	L40	W	SPACE
1236	L	%TO	Y37	R	RD LCA LINE 1.
1244	B	/78	*		BR INQUIRY IND.
1249	B	S59	F		SSW # F TEST
1254	B	J52	%		BR ON ERROR
1259	B	T77	F56	9	SW # 9 COMP NOT
1267	C	K57	Y35		COMP WR TO RD
1274	B	S83	/		BR NOT EQ
1279	B	T23			BR BY WR COMP
1283	M	%TO	L40	W	SPACE
1291	M	%TO	F29	W	WR ERROR INFO
1299	M	%TO	J78	W	WR WR REC
1307	M	%TO	X56	W	WR RD REC

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D
15	060	8		MCW	%TO	C90110	W
16	010	7	P16010	C	C93030	I45030	
16	011	1		C			
16	012	1		C			
16	013	1		C			
16	014	1		C			
16	015	1		C			
16	016	1		C			
16	030	5		B	P16037		/
16	035	4		B	P16060		
16	037	8	P16037	MCW	%TO	C90110	W
16	038	8		MCW	%TO	C98010- 15	W
16	040	8	P16040	LCA	%TO	C93010- 31	W
16	050	8		LCA	%TO	I45010- 31	W
16	060	7	P16060	MCW	T83010- 20	T83040- 31	
16	070	4		CW	T83040- 31		
16	080	7		MCW	C93010- 20	C93040- 31	
16	090	8		MCW	%TO	C90110	W
16	100			* CARRIAGE RETURN TEST			
16	110	4	P16110	SW	C97080		
16	120	8		MCW	%TO	C97010- 9	W
16	130	4		SW	C97070		
16	140	8		MCW	%TO	C97010- 9	W
16	150	4		SW	C97060		
16	160	8		MCW	%TO	C97010- 9	W
16	170	4		SW	C97050		
16	180	8		MCW	%TO	C97010- 9	W
16	190	4		SW	C97040		
16	200	8		MCW	%TO	C97010- 9	W
16	210	4		SW	C97030		
16	220	8		MCW	%TO	C97010- 9	W
16	230	4		SW	C97020		
16	240	8		MCW	%TO	C97010- 9	W
16	250	4		SW	C97010		
16	260	8		MCW	%TO	C97010- 9	W
16	270	4		SW	C97010- 6		
16	280	8		MCW	%TO	C97010- 9	W
16	290	4		SW	C97010- 7		
16	300	8		MCW	%TO	C97010- 9	W

LOC		INSTRUCTION			COMMENTS C8001
1315	M	%TO L40	W		SPACE
1323	C	R15 Z16			COMP WR TO RD
1330	C				CHAIN COMPARE
1331	C				CHAIN COMPARE
1332	C				CHAIN COMPARE
1333	C				CHAIN COMPARE
1334	C				CHAIN COMPARE
1335	C				CHAIN COMPARE
1336	B	T45 /			BR NOT EQ
1341	B	T77			BR BY WR COMP
1345	M	%TO L40	W		SPACE
1353	M	%TO F29	W		WR ERROR INFO
1361	L	%TO Q36	W		WR WR REC
1369	L	%TO Y37	W		WR RD REC
1377	M	J89 K58			SET IN AN A
1384	¤	K58			CLEAR WORD MARK
1388	M	Q47 R16			SET IN AN A
1395	M	%TO L40	W		SPACE
1403	•	F28			SET WORD MARK
1407	M	%TO E49	W		WR RETURN LINE
1415	•	F18			SET WORD MARK
1419	M	%TO E49	W		WR RETURN LINE
1427	•	F08			SET WORD MARK
1431	M	%TO E49	W		WR RETURN LINE
1439	•	E98			SET WORD MARK
1443	M	%TO E49	W		WR RETURN LINE
1451	•	E88			SET WORD MARK
1455	M	%TO E49	W		WR RETURN LINE
1463	•	E78			SET WORD MARK
1467	M	%TO E49	W		WR RETURN LINE
1475	•	E68			SET WORD MARK
1479	M	%TO E49	W		WR RETURN LINE
1487	•	E58			SET WORD MARK
1491	M	%TO E49	W		WR RETURN LINE
1499	•	E52			SET WORD MARK
1503	M	%TO E49	W		WR RETURN LINE
1511	•	E51			SET WORD MARK
1515	M	%TO E49	W		WR RETURN LINE

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D
16	310	4		SW	C97010- 8		
16	320	8		MCW	&TO	C97010- 9	W
16	330	4		SW	C97010- 9		
16	340	8		MCW	&TO	C97010- 9	W
16	410	4		CW	C97010- 9		
16	420	8		MCW	&TO	C97010- 9	W
16	430	4		CW	C97010- 8		
16	440	8		MCW	&TO	C97010- 9	W
16	450	4		CW	C97010- 7		
16	460	8		MCW	&TO	C97010- 9	W
16	470	4		CW	C97010- 6		
16	480	8		MCW	&TO	C97010- 9	W
16	490	4		CW	C97010		
16	500	8		MCW	&TO	C97010- 9	W
16	510	4		CW	C97020		
16	520	8		MCW	&TO	C97010- 9	W
16	530	4		CW	C97030		
16	540	8		MCW	&TO	C97010- 9	W
16	550	4		CW	C97040		
16	560	8		MCW	&TO	C97010- 9	W
16	570	4		CW	C97050		
16	580	8		MCW	&TO	C97010- 9	W
16	590	4		CW	C97060		
16	600	8		MCW	&TO	C97010- 9	W
16	610	4		CW	C97070		
16	620	8		MCW	&TO	C97010- 9	W
16	630	4		CW	C97080		
16	640	8		B	P16110	C999986 1	≠
17	010	5	P17010	B	P17012		D
17	011	4		B	P17015		
17	012	8	P17012	MCW	&TO	C96050- 13	W
17	013	8		MCW	&TO	C90110	W
17	014	4		B	P10040		
17	015	8	P17015	MCW	&TO	C90110	W
17	020	8		MCW	&TO	C95050- 29	W
17	040	8		MCW	&TO	C95010- 24	W
17	050	8		MCW	&TO	C90110- 1	W
17	060	4		H	0348		
40	000				* INPUT AREA		

LOC		INSTRUCTION			COMMENTS C8001
1523	.	E50			SET WORD MARK
1527	M	&TO	E49	W	WR RETURN LINE
1535	.	E49			SET WORD MARK
1539	M	&TO	E49	W	WR RETURN LINE
1547	¤	E49			CLEAR WORD MARK
1551	M	&TO	E49	W	WR RETURN LINE
1559	¤	E50			CLEAR WORD MARK
1563	M	&TO	E49	W	WR RETURN LINE
1571	¤	E51			CLEAR WORD MARK
1575	M	&TO	E49	W	WR RETURN LINE
1583	¤	E52			CLEAR WORD MARK
1587	M	&TO	E49	W	WR RETURN LINE
1595	¤	E58			CLEAR WORD MARK
1599	M	&TO	E49	W	WR RETURN LINE
1607	¤	E68			CLEAR WORD MARK
1611	M	&TO	E49	W	WR RETURN LINE
1619	¤	E78			CLEAR WORD MARK
1623	M	&TO	E49	W	WR RETURN LINE
1631	¤	E88			CLEAR WORD MARK
1635	M	&TO	E49	W	WR RETURN LINE
1643	¤	E98			CLEAR WORD MARK
1647	M	&TO	E49	W	WR RETURN LINE
1655	¤	F08			CLEAR WORD MARK
1659	M	&TO	E49	W	WR RETURN LINE
1667	¤	F18			CLEAR WORD MARK
1671	M	&TO	E49	W	WR RETURN LINE
1679	¤	F28			CLEAR WORD MARK
1683	B	U03	F57	≠	SW # ≠ TEST
1691	B	X00	D		SSW # D CONT LP
1696	B	X20			BR SSW # D OFF
1700	M	&TO	E09	W	WR SSW COMMENT
1708	M	&TO	L40	W	SPACE
1716	B	724			BR LOOP
1720	M	&TO	L40	W	SPACE
1728	M	&TO	D48	W	WR ALTER INST
1736	M	&TO	C92	W	WR CHAIN INST
1744	M	&TO	L39	W	SPACE
1752	.	348			CHAIN BR HALT

2108463 EC 405070

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	COMMENTS C8001
40	010	32	I40010	DCW	*			1787		
40	020	32		DC	*			1819		
40	030	16	I40030	DC	*			1835		
40	070	1		DCW	*			1836		
45	010	32	I45010	DCW	*			1868		
45	020	32		DC	*			1900		
45	030	16	I45030	DC	*			1916		
45	200	1	I45200	DCW	*			1917		
50	000				* ERROR ROUTINES					
50	010	8	E50010	MCW	&TO	C94010- 31	W	1918	M &TO B50 W	WRITE ERR INSR
50	020	8		MCW	&TO	C90110	W	1926	M &TO L40 W	SPACE
50	021	1		H				1934	*	ERROR HALT
50	030	5		B	P10040		E	1935	B 724 E	BR SSW # E ON
50	040	4		B	P10070			1940	B 742	BR BACK
50	110	8	E50110	MCW	&TO	C94010- 31	W	1944	M &TO B50 W	WRITE ERR INSR
50	120	8		MCW	&TO	C90110	W	1952	M &TO L40 W	SPACE
50	121	1		H				1960	*	ERROR HALT
50	130	5		B	P10110		E	1961	B 758 E	BR SSW # E ON
50	140	4		B	P10140			1966	B 776	BR BACK
50	210	8	E50210	MCW	&TO	C94010- 31	W	1970	M &TO B50 W	WRITE ERR INSR
50	220	8		MCW	&TO	C90110	W	1978	M &TO L40 W	SPACE
50	221	1		H				1986	*	ERROR HALT
50	230	5		B	P11010		E	1987	B 792 E	BR SSW # E ON
50	240	4		B	P11040			1992	B 810	BR BACK
50	310	8	E50310	MCW	&TO	C94010- 31	W	1996	M &TO B50 W	WRITE ERR INSR
50	320	8		MCW	&TO	C90110	W	2004	M &TO L40 W	SPACE
50	321	1		H				2012	*	ERROR HALT
50	330	5		B	P11110		E	2013	B 826 E	BR SSW # E ON
50	340	4		B	P11140			2018	B 844	BR BACK
50	410	8	E50410	MCW	&TO	C94010- 31	W	2022	M &TO B50 W	WRITE ERR INSR
50	420	8		MCW	&TO	C90110	W	2030	M &TO L40 W	SPACE
50	421	1		H				2038	*	ERROR HALT
50	430	5		B	P12010		E	2039	B 889 E	BR SSW # E ON
50	440	4		B	P12040			2044	B 907	BR BACK
50	510	8	E50510	MCW	&TO	C94010- 31	W	2048	M &TO B50 W	WRITE ERR INSR
50	520	8		MCW	&TO	C90110	W	2056	M &TO L40 W	SPACE
50	521	1		H				2064	*	ERROR HALT
50	530	5		B	P12110		E	2065	B 923 E	BR SSW # E ON
50	540	4		B	P12140			2070	B 941	BR BACK

```
PG LIN  CT  LABEL   OP    A OPERAND        B OPERAND      D        LOC   INSTRUCTION COMMENTS   C8001

50 610   8  E50610  MCW   %TO              C94010- 31     W        2074  M %TO 850 W  WRITE ERR INSR
50 620   8          MCW   %TO              C90110         W        2082  M %TO L40 W  SPACE
50 621   1          H                                              2090  .            ERROR HALT
50 630   5          B     P13010                          E        2091  B 957 E      BR SSW # E ON
50 640   4          B     P13040                                   2096  B 975        BR BACK
50 710   8  E50710  MCW   %TO              C94010- 31     W        2100  M %TO 850 W  WRITE ERR INSR
50 720   8          MCW   %TO              C90110         W        2108  M %TO L40 W  SPACE
50 721   1          H                                              2116  .            ERROR HALT
50 730   5          B     P13110                          E        2117  B 991 E      BR SSW # E ON
50 740   4          B     P13140                                   2122  B 109        BR BACK
50 810   8  E50810  MCW   %TO              C94010- 31     W        2126  M %TO 850 W  WRITE ERR INSR
50 820   8          MCW   %TO              C90110         W        2134  M %TO L40 W  SPACE
50 821   1          H                                              2142  .            ERROR HALT
50 830   5          B     P14110                          E        2143  B /55 E      BR SSW # E ON
50 840   4          B     P14230                                   2148  B /78        BR BACK
50 910   8  E50910  MCW   %TO              C94010- 31     W        2152  M %TO 850 W  WRITE ERR INSR
50 920   8          MCW   %TO              C90110         W        2160  M %TO L40 W  SPACE
50 921   1          H                                              2168  .            ERROR HALT
50 930   5          B     P14230                          E        2169  B /78 E      BR SSW # E ON
50 940   4          B     P14370                                   2174  B S59        BR BACK
80 000                  * DATA TABLE AND COMPARE AREAS
83 010  32  T83010  DCW   *      0123456789 ABCDEFGHIJKLMNOPQR/ST  2209
83 020  32          DC    *      UVWXYZ :@√> ¢"¤=Δ;-(#<&'%*) 0‡#!?  2241
83 030  16  T83030  DC    *                     $,./    LINE 1.  2257
83 040  32  T83040  DC    *      AJ/1 BKS2 CLT3 DMU4 ENV5 FOW6 GP  2289
83 050  32          DC    *      X7 HQY8 IRZ9 LETTER & NUMBER IN   2321
83 060  16  T83060  DC    *                     SEQ.    LINE 2.  2337
83 070   1          DCW   *                                     #  2338
83 200   1  T83200  DCW   *                                     #  2339
90 000                  * CONSTANTS
90 110   1  C90110  DCW   *                                        2340
90 111   1  C90111  DCW   *                                     #  2341
91 010  32  C91010  DCW   *       THIS IS C8001. IT TESTS THE 1407  2373
91 020  32          DCW   *       . A 4K OR MORE 1401 IS REQUIRED.  2405
91 060  32          DCW   *        TURN PROCESS CK SWITCH OFF. BEF  2437
91 070  32          DCW   *       ORE EACH TEST AN INSTRUCTIVE TYP  2469
91 080  32          DCW   *       EDUT WILL OCCUR.  FOR FURTHER     2501
91 090  32  C91090  DCW   *       INFORMATION SEE THE CE WRITEUP.   2533
91 100   1          DCW   *                                     #  2534
```

PROGRAM

```
PG LIN  CT  LABEL    OP    A OPERAND       B OPERAND       D            LOC   INSTRUCTION COMMENTS   C8001

92 070  32  C92070   DCW   *      PRESS THE REQUEST/ENTER KEY.....  2566
92 075  25           DC    *              NOW PRESS THE START KEY!!  2591
92 080   1           DCW   *                                     *  2592
92 110  32  C92110   DCW   *      THE FOLLOWING LINES OF DATA ARE   2624
92 120  32           DC    *      SENT FROM THE 1401 TO THE 1407.   2656
92 130  16  C92130   DC    *                      PRINTS ALL CHAR.  2672
92 140   1           DCW   *                                     *  2673
92 150  32  C92150   DCW   *      RD LINE 1 MOVE.   PRESS RESPOND   2705
92 160  32           DC    *      KEY AFTER LINE 1 TO PUT GMWM AT   2737
92 190  16           DC    *                      THE END OF REC.   2753
92 200   1           DCW   *                                     *  2754
92 350  32  C92350   DCW   *      RD LINE 1 LOAD.   PRESS RESPOND   2786
92 360  32           DC    *      KEY AFTER LINE 1 TO PUT GMWM AT   2818
92 390  16           DC    *                      THE END OF REC.   2834
92 400   1           DCW   *                                     *  2835
93 010  32  C93010   DCW   *      0123456789 ABCDEFGHIJKLMNOPQR/ST  2867
93 020  32           DC    *      UVWXYZ :@√>¢"¤=Δ;-(#<&'%*) 0‡#!?  2899
93 030  16  C93030   DC    *                      $,./    LINE 1.   2915
93 040  32  C93040   DCW   *      AJ/1 BKS2 CLT3 DMU4 ENV5 FOW6 GP  2947
93 050  32           DCW   *      X7 HQY8 IRZ9 LETTER & NUMBER IN   2979
93 060  16  C93060   DC    *                      SEQ.    LINE 2.   2995
93 070   1           DCW   *                                     *  2996
93 110  32  C93110   DCW   *      :@0√>‡ ¢#"¤!=Δ?;-$(#,<&.'%/*)     3028
93 120  32           DCW   *      2-1 UP-DN CARR. RIB SHIFT IN LCA  3060
93 130  16  C93130   DCW   *                       MODE.  LINE 3.   3076
93 140   1           DCW   *                                     *  3077
93 150  32  C93150   DCW   *      :@√> ¢"¤=Δ;-(#<&' %*     ----- ALL  3109
93 160  32           DC    *       UPPER-CASE SPECIAL CHARACTERS +  3141
93 170  16  C93170   DC    *                              LINE 4.   3157
93 175   1           DCW   *                                     *  3158
93 180  32  C93180   DCW   *      0‡#!?$,./   ----- ALL LOWER-CASE  3190
93 190  32           DC    *       SPECIAL CHARACTERS +             3222
93 200  16  C93200   DC    *                              LINE 5.   3238
93 205   1           DCW   *                                     *  3239
93 210   8  C93210   DCW   *                                 END.   3247
93 215   1           DCW   *                                     *  3248
93 220   1  C93220   DCW   *                                     *  3249
94 010  32  C94010   DCW   *      ERROR--TURN CHECK STOP SW ON AND  3281
94 020  32           DC    *       SSW # E ON AND TRY AGAIN.  MACH  3313
```

```
PG LIN  CT  LABEL    OP    A OPERAND      B OPERAND        D          LOC   INSTRUCTION COMMENTS    C8001
94 030  32          DC    *       WILL HANG UP AT THE ERROR CHAR.    3345
94 040  32          DC    *       PRESS START. SSW # E OFF TO TRY    3377
94 050  13  C94050  DCW   *                          NEXT RECORD.    3390
94 060   1          DCW   *                                  *       3391
95 010  25  C95010  DCW   *             IF NO DTAIL, END OF TEST.    3416
95 020  30          DC    *           PRESS START TO BR TO CHAIN.    3446
95 030   1          DCW   *                                  *       3447
95 050  30  C95050  DCW   *          TEST ALTER AT ANY STD. LOC.     3477
95 060   1          DCW   *                                  *       3478
96 010  14  C96010  DCW   *                     SSW # B LOOP.        3492
96 020   1          DCW   *                                  *       3493
96 030  14  C96030  DCW   *                     SSW # C LOOP.        3507
96 040   1          DCW   *                                  *       3508
96 050  14  C96050  DCW   *                     SSW # D LOOP.        3522
96 060   1          DCW   *                                  *       3523
96 070  24  C96070  DCW   *               SSW # G BYPASS RD INST.    3547
96 080   1          DCW   *                                  *       3548
97 010  10  C97010  DC    *                        ****TEST *       3558
97 020  10  C97020  DC    *                         RTRN @20*       3568
97 030  10  C97030  DC    *                         RTRN @30*       3578
97 040  10  C97040  DC    *                         RTRN @40*       3588
97 050  10  C97050  DC    *                         RTRN @50*       3598
97 060  10  C97060  DC    *                         RTRN @60*       3608
97 070  10  C97070  DC    *                         RTRN @70*       3618
97 080  10  C97080  DC    *                         RTRN @80*       3628
98 010  16  C98010  DC    *                   COMPARE ERROR *       3644
98 020   1          DCW   *                                  *       3645
99 998  12  C99998  DC    *                                          3657
99 999              END   0400                                              / 400 080
```

MASTER 1407 TYPEOUT

THIS IS C8001. IT TESTS THE 1407. A 4K OR MORE 1401 IS REQUIRED. TURN PROCESS CK SWITCH OFF. BEFORE EACH TEST AN INSTRUCTIVE TYPEOUT WILL OCCUR. FOR FURTHER INFORMATION SEE THE CE WRITEUP.

THE FOLLOWING LINES OF DATA ARE SENT FROM THE 1401 TO THE 1407. PRINTS ALL CHAR.

```
0123456789 ABCDEFGHIJKLMNOPQR/STUVWXYZ :@√> ¢"□=Δ;-(‡<&'%*)0‡#!?$,./    LINE 1.
AJ/1 BKS2 CLT3 DMU4 ENV5 FOW6 GPX7 HQY8 IRZ9 LETTER & NUMBER IN SEQ.    LINE 2.

:@0√>‡ ¢#"□!=Δ?;-$(‡,<&.'%/*)   2-1 UP-DN CARR. RIB SHIFT IN LCA MODE.  LINE 3.

:@√> ¢"□=Δ;-(‡<&'%*)   ----- ALL UPPER-CASE SPECIAL CHARACTERS !        LINE 4.

0‡#!?$,./   ----- ALL LOWER-CASE SPECIAL CHARACTERS !                    LINE 5.

0123456789bABCDEFGHIJKLMNOPQR/STUVWXYZb:@√>b¢"□=Δ;-(‡<&'%*)0‡#!?$,./bbbbLINEb1.b
AJ/1bBKS2bCLT3bDMU4bENV5bFOW6bGPX7bHQY8bIRZ9bLETTERb&bNUMBERbINbSEQ.bbbbLINEb2.b
b
:@0√>‡b¢#"□!=Δ?;-$(‡,<&.'%/*)bbb2-1bUP-DNbCARR.bRIBbSHIFTbINbLCAbMODE.bbLINEb3.b
b
:@√>b¢"□=Δ;-(‡<&'%*)bbb-----bALLbUPPER-CASEbSPECIALbCHARACTERSb!bbbbbbbbLINEb4.b
b
0‡#!?$,./bbb-----bALLbLOWER-CASEbSPECIALbCHARACTERSb!bbbbbbbbbbbbbbbbbbLINEb5.b
b
b
```

PRESS THE REQUEST/ENTER KEY.....NOW PRESS THE START KEY!!

RD LINE 1 MOVE. PRESS RESPOND KEY AFTER LINE 1 TO PUT GMWM AT THE END OF REC.

```
0123456789 ABCDEFGHIJKLMNOPQR/STUVWXYZ :@√>b¢"□=Δ;-(‡<&'%*)0‡#!?$,./    LINE 1.
```

PRESS THE REQUEST/ENTER KEY.....NOW PRESS THE START KEY!!

RD LINE 1 LOAD. PRESS RESPOND KEY AFTER LINE 1 TO PUT GMWM AT THE END OF REC.

```
0123456789 ABCDEFGHIJKLMNOPQR/STUVWXYZ :@√>b¢"□=Δ;-(‡<&'%*)0‡#!?$,./    LINE 1.

####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50‡ RTRN @60‡ RTRN @70‡ RTRN @80
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50‡ RTRN @60‡ RTRN @70
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50‡ RTRN @60
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40
####TEST ‡ RTRN @20‡ RTRN @30
####TEST ‡ RTRN @20
####TEST
###
##
#

#
##
###
####TEST
####TEST ‡ RTRN @20
####TEST ‡ RTRN @20‡ RTRN @30
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50‡ RTRN @60
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50‡ RTRN @60‡ RTRN @70
####TEST ‡ RTRN @20‡ RTRN @30‡ RTRN @40‡ RTRN @50‡ RTRN @60‡ RTRN @70‡ RTRN @80
```

TEST ALTER AT ANY STD. LOC.
IF NO DTAIL, END OF TEST. PRESS START TO BR TO CHAIN.

NOTES:
1. SPACE MUST BE READ IN AFTER "...LINE 1". FOR PROPER COMPARE.
2. __ UNDER CHARACTER EQUALS A WORD MARK. CHARACTER PRINTS IN RED.

DETAIL CARD TYPEOUT

```
1QAZ2WSX3EDC4RFV5TGB6YHN7UJM8IK,9OL.ØP?/‡!$#"'□(:‡%@<√*>=)Δ ;&Ø-     C8ØØ1 DTAIL
1QAZ2WSX3EDC4RFV5TGB6YHN7UJM8IK,9OL.ØP?/‡!$#"'□(:‡%@<√*>=)Δ ;&Ø-     C8ØØ1 DTAIL
1QAZ2WSX3EDC4RFV5TGB6YHN7UJM8IK,9OL.ØP?/‡!$#"'□(:‡%@<√*>=)Δ ;&Ø-     C8ØØ1 DTAIL
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DETAIL CARD TYPEOUT

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